

Chapter 5. Integrating Point Source and Nonpoint Source Management

Chapters 3 and 4 describe Wisconsin's programs for controlling nutrients from point sources and nonpoint sources. However, a description of Wisconsin programs would be incomplete without a short description of activities that assess or manage nutrients in an integrated manner. This chapter describes four of these activities: Total Maximum Daily Load (TMDL) analyses; a model called PRESTO; the Watershed Adaptive Management Option; and water quality trading. All four activities address aspects of a number of elements for Wisconsin's Nutrient Reduction Strategy.

5.1 Total Maximum Daily Loads (TMDLs)

All states, including Wisconsin, are required by EPA to develop TMDL analyses for impaired waters, (those not meeting water quality standards). TMDLs, as authorized under the federal Clean Water Act, determine the pollutant load (mass) reduction needed to attain and maintain water quality standards. TMDL analyses also allocate the maximum allowable load between each point source and nonpoint sources. As a result, in watersheds where both point sources and nonpoint sources are significant contributors of nutrients, the entire load reduction is not necessarily assigned to the point sources. As shown in Figure 5.1 Wisconsin has many approved TMDLs and is developing new TMDLs.

TMDL implementation comes through the point source programs described in Chapter 3 and the suite of federal, state and local nonpoint source programs described in Chapter 4. In the near future, implementation may also come through Watershed Adaptive Management Option projects and water quality trading described below.

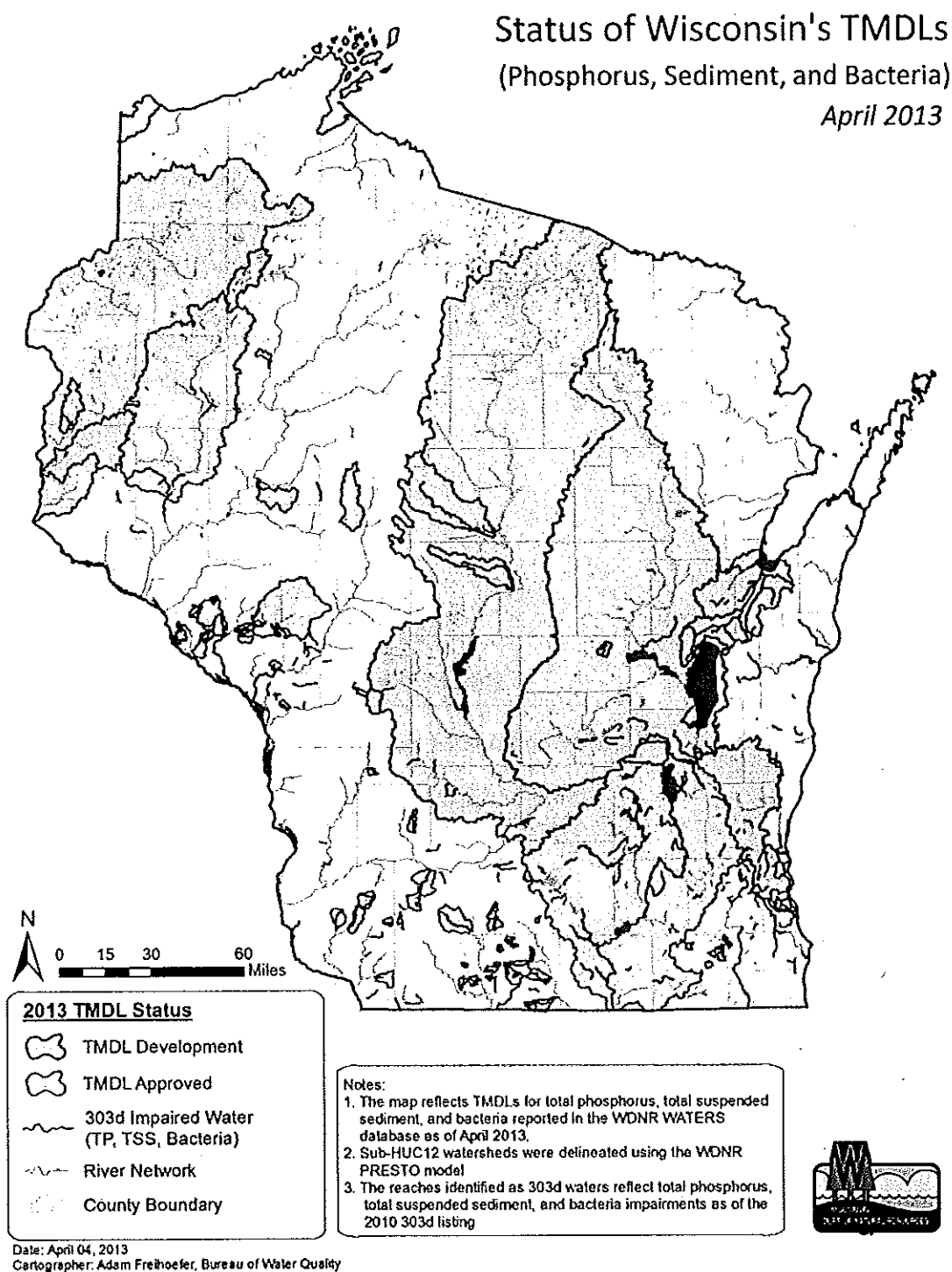


Figure 5.1 Status of Impaired Waters for Total Phosphorus.

5.2 PRESTO

The Pollutant Load Ratio Estimation Tool (PRESTO) is a screening level GIS-based tool that calculates and compares annual phosphorus loads for watersheds in Wisconsin from point sources and nonpoint sources. PRESTO was originally developed by the Wisconsin DNR to help permitted municipal and industrial facilities determine eligibility for the watershed adaptive management option to comply with the phosphorus water quality-based effluent limits in the facility's WPDES permit. Section NR 217.18, Wisconsin Adm. Code, limits the application of this option to situations where nonpoint sources, including urban storm water, contribute more than 50% of the annual phosphorus load.

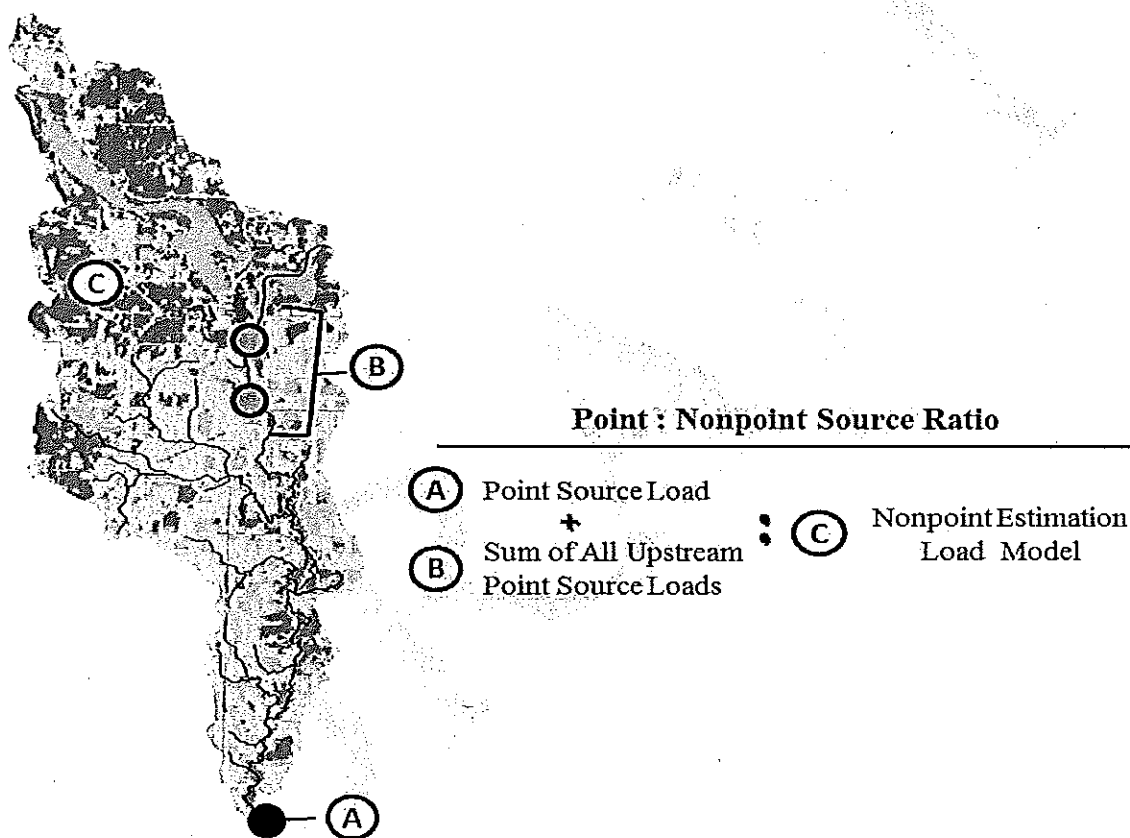


Figure 5.2 Example of PRESTO generated point to nonpoint ratio

PRESTO has been used to estimate the percent point source and percent nonpoint source contribution for the watershed upstream of 652 point source outfalls. Data from point source discharge monitoring reports is used to calculate the point source contribution while three different regression models are used to estimate the nonpoint source contribution. Results of this analysis can be found at <http://dnr.wi.gov/topic/SurfaceWater/PRESTO>. PRESTO has also been used to estimate relative point source and nonpoint source contributions for HUC 10 watersheds.

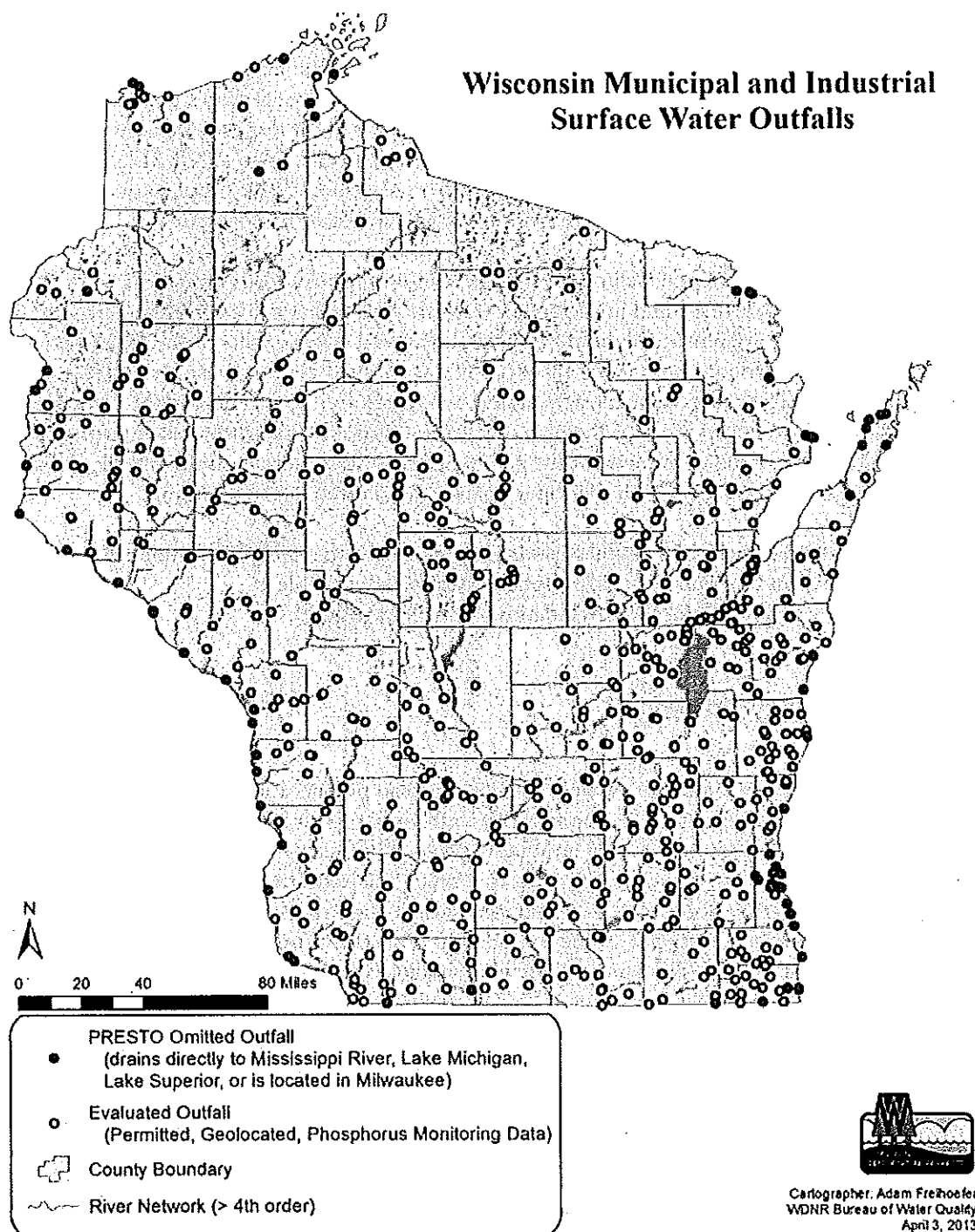


Figure 5.3 PRESTO pre-calculated source outfall points

5.3 Watershed Adaptive Management Option

The Watershed Adaptive Management Option is a compliance option for point source facilities having both stringent phosphorus effluent limits and nonpoint sources that are the dominant contributor of phosphorus to the stream, river or lake receiving the facility's effluent. It is based on the concept that control of nonpoint sources within the point source facility's upstream watershed will result in attaining and maintaining water quality standards at far less cost than installing phosphorus filtration technology at the treatment plant. It was created in s. NR 217.18, Wis. Adm. Code (effective December 2010) and was approved for use in the WPDES point source permit program by EPA in 2012. At this time, this option is only available in Wisconsin.

Under this option, point source facilities must accept interim phosphorus limits and work with watershed partners to develop and implement a watershed plan that will control phosphorus. The watershed plan when implemented should result in improved water quality in the watershed and potentially allow the effluent limit to be adjusted. The watershed plan may use a variety of implementation tools, such as education, technical assistance and financial assistance. Water quality monitoring must be a component of the plan. Facilities, along with their watershed partners, have two five-year permit terms to implement the watershed plan. Depending on the progress, the third permit may require compliance with the water quality-based effluent in the permit.

The Wisconsin Department of Natural Resources has developed a technical handbook and other guidance information to guide use of this option. These are available at <http://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html>.

5.4 Water Quality Trading

Point source facilities with stringent effluent limits may also pursue water quality trading as a compliance option. Water quality trading typically involves a permit holder facing relatively high pollutant reduction costs compensating another party to achieve less costly pollutant load reduction while providing a greater water quality benefit. In a trade, the permit holder enters into an agreement with a municipality, other point source or nonpoint source landowners within a watershed to offset a portion of the permittee's specific effluent discharge. This offset must control a greater amount of phosphorus based on model simulations than what would have to be controlled at the treatment facility to comply with the facility's effluent limit. Consistent with EPA guidance, trade ratios are used to account for uncertainties and other factors such that a greater amount of pollutant is removed. Trade thresholds and acceptable trade calculation tools are also specified in the guidance documents.

Wisconsin, as with many other states, has developed a trading framework and implementation guidance. Trading applies to a limited number of pollutants, but more detail is provided for total phosphorus and total suspended solids given the recently promulgated water quality standards criteria for phosphorus and recently approved total maximum daily loads for phosphorus and suspended sediment. For more information on water quality trading, see <http://dnr.wi.gov/topic/surfacewater/adaptivemanagement.html>.

Chapter 6. Storm Water and Septic Systems

Element 5. Storm Water and Septic Systems

6.1 EPA and Gulf Hypoxia Task Force Expectations

Quoted from EPA's recommended elements:

"Identify how the State will use state, county and local government tools to assure N and P reductions from developed communities not covered by the Municipal Separate Storm Sewer Systems (MS4) program, including an evaluation of minimum criteria for septic systems, use of low impact development/ green infrastructure approaches, and/or limits on phosphorus in detergents and lawn fertilizers."

6.2 Wisconsin's Approach

Wisconsin has programs in place to address communities not covered by the MS4 storm water system, septic systems, and the use of phosphorus in detergents and lawn fertilizers. Programs entail a mixture of regulatory controls and financial incentives to address potential nutrient sources that are not covered under a WPDES permit structure. Construction and post-construction sites are subject to performance-based standards while certain municipalities must meet minimum standards designed to reduce pollution potential. Septic systems are regulated through county ordinances and through state regulations administered by the Department of Safety and Professional Services (DSPS), which also administers a financial assistance program for failing septic systems. Wisconsin state law also restricts phosphorus in lawn fertilizers and household detergents.

6.2.1 Construction Sites, Post-Construction Sites, and Non-Permitted Municipalities

Construction sites not covered under a Municipal Separate Storm Sewer System (MS4) permit may be regulated by:

- A general construction site permit issued by the DNR, if the site has a disturbed areas of more than one acre;
- The Uniform Dwelling Code for one and two family residential construction administered by the Department of Safety and Professional Services, regardless of size;
- By technical standards of the Department of Transportation for highway construction sites; or
- By local government ordinance.

Under the general construction site permit program, ch. NR 151, Wis. Adm. Code, requirements include the following:

- Construction on any size site shall limit sediment losses to a maximum of 5 tons/acre/year.
- Construction site erosion control BMPs (Best Management Practices) located in navigable waters or wetlands are disallowed, except for re-development sites where the BMP is on an intermittent waterway and all applicable permits are received.
- Storm water management plans are required to be implemented following construction on sites of one acre or more. The plans shall include BMPs to:
 - Reduce total suspended solids losses.
 - Reduce peak runoff discharge rates to match the pre-development peak flow rates, using the 1-year 24 hour design storm and the 2-year, 24 hour design storm as peak flow rates.
 - Infiltrate initial runoff except where groundwater contamination could occur. (The rule specifies 3 levels of connected impervious conditions and assigns an infiltration percentage to each level, reflecting the ability of the development to meet the goal.)
 - Maintain a permanent 50 foot vegetative buffer area around lakes, rivers, streams and wetlands in the construction area.
 - Maintain a permanent 75 foot vegetative buffer zone around high quality wetlands such as sedge meadows, open and coniferous bogs, low prairies, calcareous fens, coniferous swamps, lowland hardwood swamps, and ephemeral ponds.
 - Control petroleum products in runoff from fueling and vehicle maintenance areas.

The construction site requirements in the Uniform Dwelling Code, s. SPS 321.125, Wis. Adm. Code, parallel and reference the requirements in ch. NR 151, Wis. Adm. Code. Similarly, performance standards for highway construction used by the Wisconsin Department of Transportation and identified in ch. NR 151, Wis. Adm. Code. More information on these regulations can be found at <http://dnr.wi.gov/topic/stormwater/construction/overview.html>

6.2.2 Septic Systems

Septic Systems, formally called private onsite waste treatment systems (POWTS), are under the purview of the DSPS (formerly the Department of Commerce). Chapter SPS 383, Wis. Adm. Code contains policies and procedures to establish uniform standards and criteria for the location, design, installation, inspection and management of septic system to ensure that systems will not harm public health and the waters of the state. Standards are based on the premise that soil column properties will treat the wastewater to a point where adverse impacts to surface and groundwater are minimized. Specifically:

- Soil percolation rates or soil morphological features (texture, shape, grade) dictate the maximum application rate in gallons per square foot per day. Five-day biological oxygen demand and total suspended solids of the influent also factor into the maximum application rate.
 - Soil texture, percent coarse fragments, and fecal coliform levels dictate whether 24, 36, or 60 inches of unsaturated soils are required for discharge.
 - Soil profile borings instead of previous “perc” tests are required to determine drain field siting.
- County Sanitarians administer the program at the local level.

Failing septic systems that were installed prior to July 1, 1978, are eligible for financial assistance to replace or rehabilitate the system. Chapter SPS 387, Wis. Adm. Code, governs this assistance program. A failing septic system is defined in s. 145.245 (4), Stats, and is one which causes or results in any of the following conditions:

- The discharge of sewage into surface water or groundwater.
- The introduction of sewage into zones of saturation, which adversely affects the operation of a private sewage system.
- The discharge of sewage to a drain tile or into zones of bedrock.
- The discharge of sewage to the surface of the ground.
- The failure to accept sewage discharges and the back up of sewage into the structure served by the private sewage system.

6.2.3 Lawn Fertilizer

Wisconsin prohibits the use and sale of fertilizer containing phosphorus except under certain conditions. State law restricts the use and sale of phosphorus containing fertilizer to only those establishing new lawn or those whose soil tests indicate a need for applied phosphorus. The statutes also restrict the retail display of fertilizer to only those products not containing phosphorus. Agricultural fertilizer use is exempted from these restrictions. The term "fertilizer" does not include manipulated animal or vegetable manure or finished sewage sludge product. Restrictions are administered by DATCP under the authorities of s. 94.643 Wisconsin Stats.

The use restrictions are:

- fertilizer containing phosphorus may not be used unless the person is establishing grass or if a soil test (taken within the last 36 months) indicates a phosphorus deficiency in the soil.
- fertilizer, manipulated animal or vegetable manure, or finished sewage sludge product may not be applied to turf when the ground is frozen.
- fertilizer, manipulated animal or vegetable manure, or finished sewage sludge product may not be intentionally applied to an impervious surface.

The sales restrictions are:

- No person may sell a retail turf fertilizer that is labeled as containing phosphorus or available phosphate if the person knows that the purchaser intends to use the fertilizer for a purpose other than one of the following:
 - For establishing grass, using seed or sod, during the growing season in which the purchaser began establishing the grass.
 - For application to an area if the soil in the area is deficient in phosphorus, as shown by a soil test performed no more than 36 months before the application by a laboratory.
 - For application to pasture, land used to grow grass for sod, or any other land used for agricultural production.

More information on the restrictions for use and sale of lawn fertilizer is available here:
http://datcp.wi.gov/Environment/Fertilizer/Turf_Fertilizer/Retailers/

6.2.4 Phosphorus in Detergents.

Wisconsin limits phosphate in detergents for washing machines and automatic dishwashers. Regulations restricting the sale of detergent products are enforced through DATCP Consumer Protection Division. Specific restrictions and exemptions are included in section 110.28 Wisconsin Statutes found, here: <http://docs.legis.wisconsin.gov/statutes/statutes/100/28>.

6.3 Future Directions

Wisconsin will continue to implement existing programs and emphasize improving their integration with watershed planning and management efforts.

Chapter 7. Accountability and Verification Measures

Element 6. Accountability and Verification Measures

7.1 EPA and Gulf Hypoxia Task Force Expectations

Quoted from EPA's recommended elements:

- "A. Identify where and how each of the tools identified in sections [Elements] 3, 4, and 5 will be used within targeted/priority sub-watersheds to assure reductions will occur.
- "B. Verify that load reduction practices are in place.
- "C. Assess/Demonstrate progress in implementing and maintaining management activities and achieving load reduction goals:
 - 1) establish a baseline of existing N & P loads and current Best Management Practices (BMP) implementation in each targeted/priority sub-watershed,
 - 2) conduct ongoing sampling and analysis to provide regular seasonal measurements of N & P loads leaving the watershed, and
 - 3) provide a description and confirmation of the degree of additional BMP implementation and maintenance activities."

7.2 Wisconsin's Approach

Wisconsin is developing an integrated point source and nonpoint source tracking and reporting system to be used at the 12-digit HUC level. Presently, the state relies on discharge monitoring reports and efforts by County Land and Water Conservation Departments, supported by state agencies, for tracking and reporting of BMPs. The current proposal is to build upon this framework to develop a comprehensive nutrient tracking system.

7.2.1 Point Source Tracking

As summarized in Chapter 3 of this document, Wisconsin requires discharge monitoring reports from WPDES permit holders for phosphorus discharges. Data exist back to the mid-1990s. For tracking nitrogen point source discharges, DNR is phasing in enhanced discharge monitoring for nitrogen for wastewater treatment facilities in the Mississippi River basin (see Chapter 8).

7.2.2 Watershed based nutrient tracking for practices to reduce Nonpoint Sources

As described in previous chapters (and also in Wisconsin's Nonpoint Source Program Management Plan, <http://dnr.wi.gov/topic/nonpoint/aboutnpsprogram.html>) many programs administered in Wisconsin rely on some level of BMP tracking. Wisconsin counties lead the state's efforts to track compliance issues and water quality management practices associated with the NR 151 performance standards and prohibitions. Capacity and type of tracking system varies by county and are

inconsistent across the state. DATCP and DNR compile summaries of BMP data and prepare annual reports. While developing this Nutrient Reduction Strategy, a Tracking and Reporting Work Group began outlining an integrated tracking system that could serve an expanded set of state and local needs. Current and future efforts will help build capacity for county-level tracking that addresses these multiple program needs. Federal agency partners will continue to conduct separate compliance assessments related to their programs.

WDATCP and the Tracking and Reporting Work Group members have surveyed counties to learn the extent, variety, and capabilities of county BMP and compliance tracking systems. Current systems range from paper files to highly sophisticated GIS-based data management systems. WDATCP and the Tracking and Reporting Work Group is compiling a comprehensive statewide summary of county systems, including the type of tracking system in place (if any), the practices and related information in the database, and how those data are collected and updated. Outcomes from this assessment and their implications for the creation of an integrated nutrient tracking system are addressed in the Future Directions portion of this chapter.

Table 7.1 Sample of current nutrient reduction tracking needs

Lead Organization	Program/Tracking Need	Information Collected	Reporting
DNR	Verification of funded BMPs through multiple grant and financial assistance programs	BMP implementation; compliance with NR151	Reports to state and EPA
DNR	Public wells meeting health standards	Nitrate levels	State, EPA, database
DATCP	Compliance with NR151 and Working Lands Initiative	Nutrient Management Plans (acres and farms)	Annual reports; WLI compliance checking
Count Land & Water Conservation Depts	NR151 compliance and county ordinance	BMPs	County, state

7.3 Future Directions

Building on innovative GIS-based tracking and inventory systems developed by multiple counties, DATCP, DNR, and the Wisconsin Land and Water Conservation Association (WLWCA) are exploring options to make efficient tracking systems available to all Wisconsin counties. The systems should be able to meet multiple data management and BMP tracking needs, and would be most efficient if they could be accessed from farm fields. While reviewing county tracking systems, WLWCA, DNR, and DATCP will examine inventory technologies, assess effectiveness with counties, and establish needed support mechanisms for counties to install and operate a tracking system. By coordinating trainings and work groups, project partners will establish an effective communication network for system users to share successes, failures, and new approaches to inventorying farms and conservation practices.

The Tracking and Reporting Work Group will systematically evaluate issues related to a potential integrated statewide tracking system throughout 2013. On initial review, systems in Outagamie County (east-central Wisconsin), Marathon County (central Wisconsin), and Eau Claire County (western Wisconsin) hold promise for an integrated statewide effort. Screen shots from the three systems are included in Figures 7.1, 7.2, and 7.3. Additional systems may be identified through the statewide assessment currently underway.

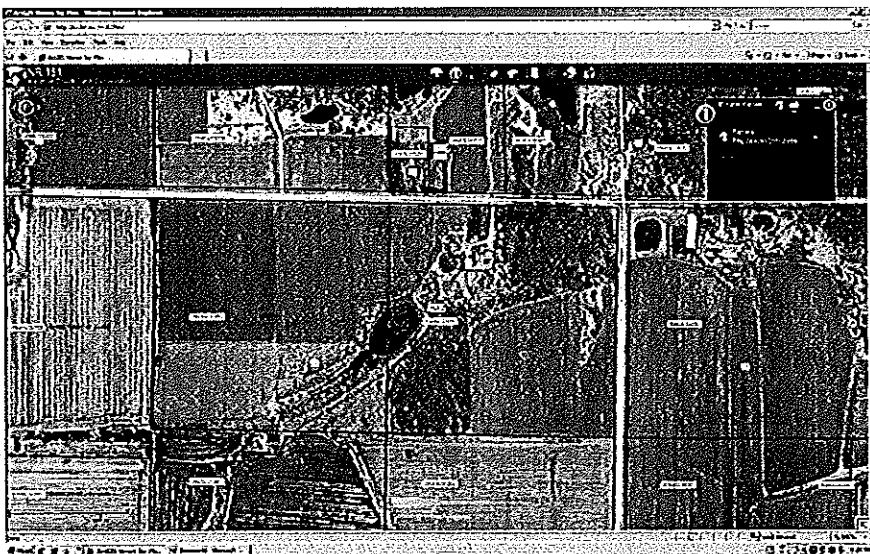


Figure 7.1 Marathon County Tracking System – ability for zoom-in view of individual parcels

 A screenshot of a web-based form titled 'Annual Certification'. The form is divided into several sections for data entry. On the left, there are fields for 'Working Tax Year' (set to 2012), 'Last Name', 'First Name', and 'Conservation Plan Date'. A large black arrow points from the 'Conservation Plan Date' field to the 'Annual Certification' section. The main section contains a table with columns for 'Standard', 'Compliance status', and 'date to achieve (if needed)'. The table lists various standards related to farmstead management, manure storage, and water diversion. Each standard has a dropdown menu for the compliance status. At the bottom, there are fields for 'Date of Annual Self-Certification' and 'Date of Review of NRIS'.

Figure 7.2 Eau Claire County Tracking System – links to multiple county data sets

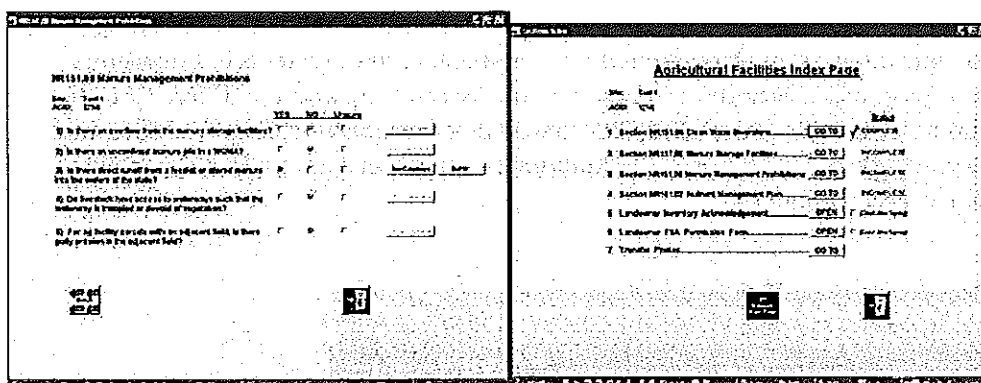


Figure 7.3 Sample screens from Outagamie County Tracking System

The Tracking and Reporting Work Group identified several issues to address in coming months. A selection of key issues is listed here.

Tracking System Structures

- Explore and develop the ability to aggregate tracking information for a variety of programs and purposes.
- Pursue the aggregation of tracking information to the HUC 12 level. This aggregation should be kept simple for reporting purposes and would not target individual farm-level information.
- Evaluate the addition of a nutrient reduction component to existing county tracking systems.

Baseline Issues

It is challenging to determine a “baseline” for tracking purposes, because the baseline differs according to its purpose. A baseline that enables determination of a base load is not the same as one that enables determination of a load reduction.

Models

Future meetings will determine how to use aggregated tracking data for models. Models may be used to evaluate and quantify non-cropland sources of nutrients. Groundwater modeling may provide additional data to track nutrients, especially those from field-tile sources.

Reporting

The Tracking and Reporting Work Group identified these topics concerning reporting on nutrients:

- Who is the intended audience for various reporting, especially for new reporting mechanisms?
- How will nutrient tracking reports best be generated and conveyed to these audiences?
- How could an annual Nutrient Summit play a role that combines summarizing tracking information, and relaying specific efforts to further reduce nutrient loads?

Chapter 8. Water Quality Monitoring

8.1 EPA and Gulf Hypoxia Task Force Expectations

EPA Expectations for water quality monitoring are an implied component of all 8 elements in the Nutrient Reduction Framework, the Gulf Hypoxia essential elements, and related programs. Monitoring data are critical for targeting and prioritizing watersheds (Element 1), supporting determination of load reductions (Element 2), determining the effectiveness of permit programs (Element 3), understanding nutrient concentrations in agricultural areas (Element 4), documenting conditions in urbanized areas and from septic systems (Element 5), accountability and verification of efforts (Element 6), reporting (Element 7), and establishing numeric criteria for nutrients (Element 8). Other EPA programs, such as the Section 319 Program for addressing nonpoint source pollution, also emphasize water quality monitoring of implementation projects. Simply stated, EPA expects Wisconsin to have an effective monitoring program as well as the capability to determine trends and implement a Nutrient Reduction Strategy.

8.2 Wisconsin's Approach - Surface Water

Extensive water quality monitoring has occurred in Wisconsin for decades. DNR is the lead state agency for surface water quality monitoring but other state agencies, including DATCP, the Department of Health Services (DHS) and the University of Wisconsin System also conduct monitoring activities. In addition federal agencies, including USGS and NRCS, counties through their Land & Water Conservation Departments or health departments), non-profit organizations, volunteers, and many other local partners conduct monitoring activities. Each agency and organization conducts monitoring designed to meet specific programmatic needs, resulting in a tremendous body of information about the status of Wisconsin's waters. A partial listing of programs is included in Table 8.1.

8.2.1 Coordination of water monitoring efforts

Wisconsin's multiple water quality monitoring efforts recognize the importance of effective monitoring to (1) calculate nutrient loads from major basins, (2) identify those basins with highest contributions (mass and yield), (3) determine trends, and (4) document progress. The workgroup assembled to address monitoring needs associated with the Nutrient Reduction Strategy identified opportunities for improving coordination and data management among Wisconsin's multiple monitoring efforts to support the strategy. Several key monitoring programs are discussed below.

8.2.2 Key Monitoring Program Components

DNR Long-Term Trend (LTT) River Monitoring

Wisconsin's Long Term Trend (LTT) River water quality monitoring network is maintained by DNR. The LTT River network consists of 42 sites, with a minimum of one site per major river basin, generally located near the mouth of each river, most often at a site of a USGS gaging station.¹⁶ The sites are identified in Figure 8.1. Selection of the 42 trend monitoring sites considered different land coverage in the state varying from urban areas in the southeast, heavy agricultural use in central and southwest, and forest cover dominating the north. Just over half the sites (24) are sampled monthly and other sites quarterly. Monthly sites are generally located near the mouth of major rivers, whereas quarterly sites are often located at additional locations some distance above. DNR collaborates with other agencies that provide water quality measurements for some sites on the Mississippi River (e.g., Lock and Dams (LD) 3 and 4). Water quality samples are analyzed for nutrients, solids, specific conductance, pH, hardness, alkalinity, bacteria, and chlorophyll. Biannually they are analyzed for triazine herbicides during winter and summer. All analyses follow approved U.S. EPA methods.

Information from long-term trends sites has been used to calculate annual loads to the Great Lakes as part of EPA's reporting to the International Joint Commission. LTT River data have also contributed to background information for biennial Integrated Reports ("305b" Reports to US Congress), Wisconsin phosphorus rules, and development of current trends analysis (Robertson and Diebel, in preparation). Many LTT River sites are proposed to be included in a tributary load monitoring network for the Mississippi River. Information from these sites has also been used to calculate nutrient trends briefly described in Chapter 2.

DNR Watershed Rotation Water Quality Monitoring

The Watershed Rotation Water Quality Monitoring activity was initiated in 2006 to collect water chemistry information at the downstream location, "pour point," of each of 333 DNR watersheds (approximately HUC 10 size). If the watershed had multiple pour points, the largest stream was monitored. Water chemistry sampling was conducted at a monthly interval (e.g., every second Wednesday of the month) to avoid weather related bias. Field parameters included temperature, dissolved oxygen, pH and turbidity (using a transparency tube). Lab parameters include total phosphorus, ammonia-N, total Kjeldahl-N, nitrite-nitrate-N and suspended solids. This monitoring ended in September 2011. This information has been used in the targeting and priority setting analysis described in Chapter 1.

DNR TMDL Development

TMDL development across the state has resulted in an increased level of monitoring to help determine pollutant load reductions necessary to meet water quality criteria. The monitoring associated with each TMDL varies widely and depends on the pollutant(s) of concern, the existing monitoring data, the geographic scale of the TMDL, and other factors. Often, DNR leads the monitoring efforts associated with TMDL development but a number of other entities contribute

¹⁶ from "Wisconsin's Long Term Trend Water Quality Monitoring Program for Rivers: July 2001-June 2005." Prepared by the DNR Bureau of Watershed Management River Long Term Trends Work Group. November 2006.

effort. County Land & Water Conservation Departments, USGS, wastewater treatment facilities, local citizen groups, and others have contributed to DNR or third party TMDL development efforts.

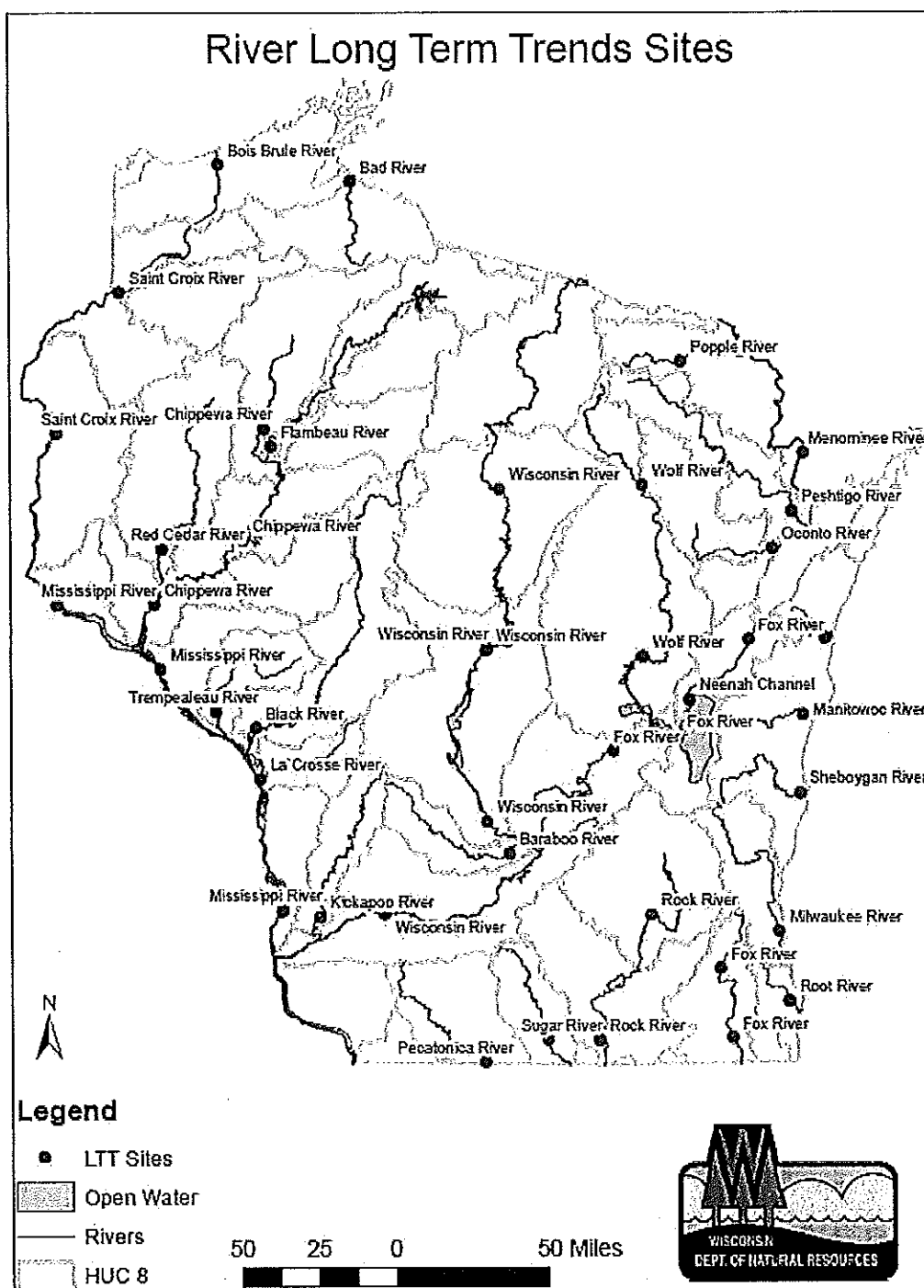


Figure 8.1 Wisconsin's River Long-Term Trend Monitoring Sites

USGS Flow Gaging and Water Quality Monitoring

The USGS is active in water quality monitoring and research across Wisconsin. USGS maintains a large network of flow gaging stations, including many long-term sites across the state that provide information used in a number of water quality programs, such as for calculating nutrient loads and point source permit effluent limits. Additional water quality monitoring sites are maintained through partnerships with DNR and others as part of various studies. These partnerships take advantage of USGS's equipment, expertise, and historical involvement in Wisconsin.

NRCS Monitoring

NRCS in collaboration with USGS, has organized monitoring efforts primarily through the Mississippi River Basin Initiative (MRBI). This three-tiered approach supports efforts to reduce nutrient loading from fields to waterways. The three tiers include edge-of-field monitoring, small watershed monitoring, and large watershed monitoring. These three tiers are intended to examine the impact field-level nutrient reduction practices have on loadings to adjacent waterways while also examining in-stream water quality at a number of scales. NRCS does not conduct monitoring itself but works with multiple partners to provide that service.

Multi-Partner Monitoring

A number of additional monitoring efforts that are collaborative between multiple agency and organizational partners generate substantial water quality data for Wisconsin. Two projects focus on the water quality trading and watershed adaptive management options for meeting nutrient standards (see chapter 5 of this document). Municipal wastewater treatment facilities often partner with county Land & Water Conservation Departments to conduct the monitoring for these projects. County Land & Water Conservation Departments also frequently partner with agencies for other water quality monitoring efforts, including for TMDL development. Permitted wastewater discharge facilities (municipal and industrial) individually collect water quality data, and as a group, they provide data for selected urban areas of the state. Another set of monitoring efforts that collectively provide water quality data for the state is the volunteer monitoring program guided by DNR and UW-Extension. Volunteers are trained in techniques to ensure that the data they collect adheres to agency standards and is pertinent to statewide monitoring goals. Volunteer monitoring is often conducted by non-profit groups and individuals. An additional outcome of volunteer monitoring programs is increased awareness of water quality issues statewide.

Table 8.1 Select water quality monitoring programs in Wisconsin

Monitoring Program	Water Quality Management Needs				
	Determine status/ impaired	Calculate Nutrient Loads	Identify High Yield Watersheds	Determine Trends	Document Progress
DNR					
River Long Term Trend		X	X	X	X
Great Lakes Tributary Nutrient Monitoring (LTT)		X		X	X
Mississippi River Basin Nutrient Analysis (proposed)		X		X	X
Watershed Rotation Water Quality			X	X	
TMDLs		X	X		
Impaired Waters Evaluation	X				X
Lake Long Term Trend		X	X	X	X
Lake Michigan Cladophora/Nutrient Study	X				X
NRCS					
Three-Tier Monitoring	X				X
USGS					
Rural Water Quality Research Studies		X			
Stream flow (gauge) sites		X		X	X
Cooperative Water Quality Studies	X	X	X		X
Metropolitan Sewerage Districts					
Green Bay Ambient Water Quality Monitoring		X		X	X
Milwaukee Water Quality Monitoring		X		X	X
Multi-Partner					
Adaptive Management		X			X
Water Quality Trading		X			X
Upper Mississippi River Long Term Resource Monitoring Program	X	X			X
Volunteer Lake and Stream Monitoring	X		X	X	X
Municipal/Industrial Discharge Monitoring		X			X
Other County monitoring					

8.3 Wisconsin's Approach - Groundwater and Drinking Water

Groundwater monitoring in Wisconsin occurs primarily through public water system testing associated with federal Safe Drinking Water Act (SDWA) requirements, private well testing for drinking water quality by individual homeowners, and formal monitoring programs conducted by DNR, DATCP, GNHS and USGS. The University of Wisconsin Stevens Point also maintains an extensive statewide database with water quality results from private wells and winter stream base-flow monitoring. The information collected from these efforts is used for various public health and environmental management purposes. Although groundwater monitoring programs frequently include nitrogen, phosphorus, due to the absence of human health concerns and low mobility in groundwater is rarely included.

None of the above programs is focused on characterizing statewide groundwater with respect to nutrients or other contaminants. Compared to surface water monitoring, groundwater monitoring is more difficult due to the expense of constructing wells and considerations of contaminant transport, travel times, depth, and aquifer type. Because of the expense and these considerations there is no ambient groundwater quality network in Wisconsin.

8.3.1 Coordination of water monitoring efforts

In 1983 the Wisconsin Groundwater Coordinating Council (GCC) was created to serve as a means of increasing the efficiency and facilitating the effective functioning of state agencies in activities related to groundwater management. The GCC is composed of representatives from six state agencies, the State Geologist and Governor's representative and advises and assists state agencies in the coordination of nonregulatory programs and the exchange of information related to groundwater.

One of the GCC's main concerns has been groundwater monitoring and research activities and through their efforts groundwater monitoring has improved due to increased communication and eliminated duplication of effort. The GCC has coordinated the Joint Solicitation for proposals to Wisconsin's Groundwater Research and Monitoring Program Since 1991 The DNR, UWS, DATCP, and Commerce have funded over 400 groundwater monitoring and research projects.

The GCC prepares a report each year that, among other thing, summarizes the condition of the groundwater resource. Nitrate, being a leading threat to groundwater, is discussed at length in the report at: <http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/Nitrate.pdf>

8.3.2 Key Monitoring Program Components

Wisconsin's multiple groundwater quality monitoring efforts recognize the importance effective monitoring to characterize the quality of the resource, respond to groundwater quality problems, and assess the effectiveness of management efforts.

DNR Public Water System Monitoring

The DNR's Bureau of Drinking Water and Groundwater implements and enforces the requirements of the Safe Drinking Water Act in Wisconsin. There are approximately 11,500 public water systems in the state and each must monitor the quality of the water it provides. These systems monitor for nitrate-nitrogen at least annually.

An example of recent use of public water supply data for resource monitoring purposes is DNR's "Wisconsin Safer Drinking Water Nitrate Initiative. The initiative is targeted at reducing nitrate levels in groundwater by making the most efficient use of nitrogen in agricultural production. Activities in project areas include measuring all current nitrogen inputs and baseline groundwater nitrate levels, calculate agricultural input and production costs, determine and implement best nitrogen management practices that optimize groundwater conditions and agricultural production efficiency, and measure whether predicted results are achieved. Target areas were selected by reviewing statewide at non-community public well data (see Figure 8.2). Project areas have been selected in Rock and Sauk Counties within subwatersheds with large numbers of public drinking water systems approaching unsafe levels of nitrate contamination. DNR is currently working with stakeholders to determine an optimal nitrogen management system. In the next phase of the project the nitrogen management system will be applied in one of the project areas. Monitoring of nitrogen inputs, groundwater nitrate levels, production costs will continue and costs of nitrogen management will be compared to water treatment costs.

Private Drinking Water Supply Well Monitoring

Regulations do not require that private water well be sampled for nitrate. However many well owners do have their well tested because of concerns about contamination. DNR, DATCP and UW-SP track this data where available. Since sampling is done for only a minority of wells the data is difficult to use to characterize the resource. However, DATCP has conducted 4 statewide surveys (1994, 1996, 2001 and 2007) using a stratified random sampling procedure that were used to represent groundwater accessible by private wells. The 2007 survey (<http://datcp.wi.gov/uploads/Environment/pdf/ARMPub180.pdf>) estimated that the proportion of wells that exceeded the 10 mg/l enforcement standard for nitrate-nitrogen was 9.0%. The UW-SP maintains a private well sampling program and a statewide database of private well water quality. The data is accessible through their Groundwater Quality Viewer (http://gissrv2.uwsp.edu/cnr/gwc/pw_web/) map viewer which displays groundwater quality information from private wells around the state.

Contaminated Site Monitoring

DNR, DATCP and DSPS monitor sites of groundwater and soil contamination for the purpose of implementing the groundwater standards contained in ch. NR 140, Wis. Adm. Code. Monitoring occurs at sites associated with: spills, hazardous substance release sites, abandoned containers, drycleaners, brownfields, leaking underground storage tanks, closed wastewater and solid waste facilities, hazardous waste corrective action and generator closures, and sediment cleanup actions, proposed, active, and inactive solid waste facilities and landfills, municipal and industrial wastewater discharges, by-product solids and sludge disposal from wastewater treatment systems, and wastewater land treatment/disposal systems. Many of these sites are monitored for nitrate and/or ammonia concentrations but the data is somewhat difficult to access.

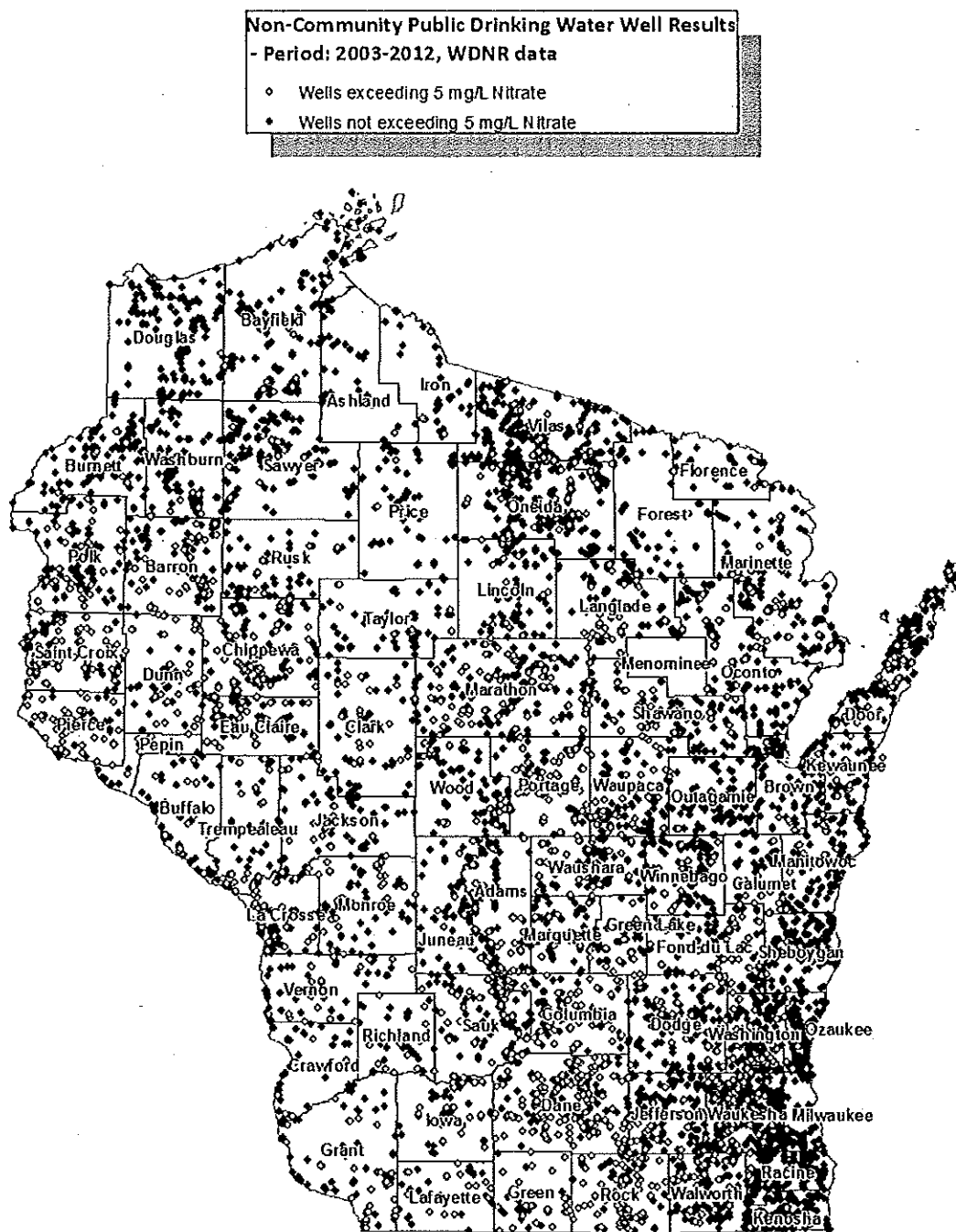


Figure 8.2 Non-community public wells with raw water samples exceeding 5 mg/L Data source: DNR Drinking Water System, 2013.

Groundwater Management Practice Monitoring Projects

DNR, UWS, DATCP and DSPS/Commerce/DILHR have funded over 400 Groundwater Research and Monitoring projects since 1983. Many of these projects have contributed to the understanding of nitrogen occurrence in Wisconsin's groundwater. A list of projects is here:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/MonitoringResearch/AllProjects.pdf>.

A partial listing of groundwater monitoring programs is included in Table 8.2.

Table 8.2 Selected groundwater and drinking water quality monitoring programs

Monitoring Program	Objective	Agency	Identify High Yield Watersheds	Determine Trends	Document Progress
Public water system monitoring	Determine Compliance - SDWA requirements	DNR – DG	No	Yes	Yes
Private well monitoring	Determine compliance - bacteria	DNR-DG	Possibly	Possibly	In limited cases
Private well monitoring	Determine compliance – pesticides and nitrate	DATCP	Possibly	Possibly	In limited cases
Private well monitoring	Homeowner information	UW-SP	Possibly	Possibly	In limited cases
Landfill	Determine compliance – groundwater standards	DNR – WMM	Possibly	Yes	Yes
Contaminated and cleaned-up sites	Determine compliance – groundwater standards	DNR-RR	Possibly	Yes	Yes
Wastewater discharges, by-product solids, and sludge disposal	Determine compliance – Groundwater standards	DNR-WQ	Possibly	Yes	Yes
County monitoring	Various	Some Counties	Various	Various	Various
Management Practice Monitoring and Research	Evaluate effectiveness of management practices and various other	DNR, UWS, DATCP, USGS, WGNHS and others	Possibly	Possibly	Possibly

8.4 Future Directions for Monitoring Improvement

The multiple agency partners involved in developing this Nutrient Reduction Strategy are exploring opportunities to ensure that existing monitoring efforts are coordinated into an expanded framework for water quality monitoring. The workgroup determined that an improved state monitoring framework could enhance communication and coordination among monitoring entities, guide future monitoring efforts, and continue to meet the specific and multiple programmatic needs

for analysis and reporting. The vision for an improved monitoring framework involves coordinating existing efforts through multiple levels. There are three levels of monitoring for surface water and three levels for groundwater.

8.4.1 Surface Water Monitoring

The three levels of surface water quality monitoring coordination are described below. Together, they outline a structure to organize current monitoring efforts occurring across Wisconsin based on their goals, characteristics, and outcomes. The levels will be clarified and further refined as the Monitoring Work Group reviews details of monitoring efforts, such as scale, purpose, and potential for coordination.

Level 1 - A fixed statewide network to describe status and trends

The objective of Level 1 is to characterize nutrient concentrations and loads and quantify long-term nutrient trends from HUC 6 and HUC 8 watersheds. To best achieve this objective a spatially distributed network of fixed stations co-located with flow gaging stations would be operated over a long term. Sites within the Wisconsin network may also be part of multi-state networks for the Great Lakes or Mississippi River Basin. Water chemistry samples should be collected at least on a monthly basis and analyzed for nutrients, and suspended sediment/solids. Flow should be monitored on a continuous basis. The existing DNR River LTT network described above and the Great Lakes Nutrient Load monitoring with their associated USGS flow gaging stations fit into this level. Wisconsin will continue to conduct long-term trend monitoring through DNR LTT River network. Data will be used for trend analysis, the biennial Integrated Report, and more.

Level 2 - A flexible network to identify high nutrient concentration surface waters

The objective of Level 2 is to identify lakes, streams and rivers with high concentrations of nutrients that occur especially during the growing season (May through October). These waters will probably have high nutrient loadings. To best achieve this objective a spatially distributed network of stations corresponding to HUC 10s or HUC 12s is needed. Water chemistry samples for this objective should generally be taken on a monthly basis and analyzed for phosphorus, nitrogen and suspended sediment/solids. Given the size of such a network, continuous flow gaging is not practicable. The DNR Watershed Rotation Water Quality Monitoring activities fit into this level, and preliminary analysis is underway. More detailed monitoring would be needed – possibly in targeted HUC 10s – to best identify implementation projects at the HUC 12 scale. Sites in this network could be sampled on a rotational basis. Self help volunteer monitoring of lakes (for Secchi depth, total phosphorus, and chlorophyll a) and volunteer stream monitoring (for phosphorus) could also fit into this level. Data from Level 2 would also contribute to the biennial Integrated Report and to TMDL development and implementation.

Level 3 - Special projects to quantify surface water process and effects of management practices

Monitoring at this level addresses specific questions to determine cause and effect of implementing specific land use practices. Nutrient loads in surface water in watersheds of varying sizes across the state would be analyzed before and after implementation of the practices. Comparisons would be

made to determine the effects of the practices on nutrient loads. The spatial scale for this level is generally at HUC 12 or smaller, depending on the specific questions being answered. Flow and concentration measurements would be made to support load calculations. Depending on the duration of the effort, this level may support trend identification. The frequency of monitoring and other details would vary by project. Several existing efforts fit into this level, including NRCS small watershed projects (e.g., East River, Dane Co projects), and UW projects including Pioneer and Discovery Farms, and volunteer monitoring within a specific watershed. An example of an emerging application for this level could be in-stream sampling by POTWs associated with trading or the Watershed Adaptive Management Option.

8.4.2 Groundwater Monitoring

The two levels of groundwater quality monitoring coordination are described below. Together, they outline a structure to organize current monitoring efforts occurring across Wisconsin based on their goals, characteristics, and outcomes. The levels will be clarified and further refined as the Monitoring Work Group reviews details of monitoring efforts, such as scale, purpose, and potential for coordination.

Level 1 - A fixed statewide network to describe status and trends

The goal at this level is to carry out regular monitoring of groundwater across the state to characterize the status and long-term trends of nitrate-nitrogen concentrations in Wisconsin's groundwater. As with surface water monitoring at this level, this would allow for patterns to be analyzed and areas flagged for further study if high concentrations are observed. Ideally, a network of fixed sites that are spatially and geologically distributed and representative of groundwater statewide is needed. These sites would be maintained over the long term and would be monitored semi-annually or annually. The three-dimensional nature of factors that affect groundwater pose challenges to developing a monitoring network at this level. Different geologic formations vary in their susceptibility to contamination and thus well depth and aquifer information are important considerations. A network of this type is currently far beyond the financial resources available.

In 2012-2013 the GCC's Research and Monitoring Subcommittee evaluated options for achieving this goal and arrived at three options: 1) using available private well data; 2) using a statistical approach similar to what DATCP published in 2008 sampling a relatively small number of private wells at strategic locations and settings; and 3) using non-community public water well data as shown in Figure 8-2. Option 1 is a good tool to address issues such as where and when wells have been drilled and abandoned and can add some insight to where nitrate is most prevalent but is fraught with problems related to the disparate nature of the data set. Option 2 is a solid, cost-effective approach but the budget of approximately \$100,000 is currently out-of-reach. This leaves Option 3 as the best currently attainable method. The 2008 DATCP report is available here: (<http://datcp.wi.gov/uploads/Environment/pdf/ARMPub180.pdf>).

Level 2 - Identification of high nitrate concentration in groundwater using existing wells

Monitoring at this level addresses specific questions to determine cause and effect of implementing specific land use practices on water levels and nutrient concentration in groundwater as needed across the state. Numerous Management Practice Monitoring Projects have monitored specific

nitrogen-contributing agricultural or waste disposal practices to evaluate the effect of various geological conditions and management practices on nitrogen loading to groundwater. Another example of this kind of work is DNR's "Wisconsin Safer Drinking Water Nitrate Initiative" which is targeted at reducing nitrate levels in groundwater by making the most efficient use of nitrogen in agricultural production. By focusing on small project areas an optimal nitrogen management system is more likely to be effective.

8.4.3 Moving Forward

Agency partners have already identified many issues to address as part of their discussions exploring the potential for this tiered approach. Issues include identifying additional sites for the Long Term Trends (LTT) monitoring, identifying sampling frequency and methods for sites within various levels, and protocols for reporting and sharing data.

Table 8.3 Potential levels for coordinating water quality monitoring

Level	Spatial Scale	Key Measurements	Duration	Monitoring Goals	Trend Analysis	Monitoring Frequency	Lead Monitors
1 - surface	Approx. HUC 8	Flow and concentrations	Ongoing	Broad	Yes	Monthly	DNR/USGS
2 - surface	Approx. HUC 10 or 12	Concentrations	Periodic (perhaps every 5 years)	Inventory of conditions and for flagging waterways with high concentrations for follow up study.	Possibly, but would be at a coarse scale	Monthly for 12 months	DNR
3 - surface	Various scales, generally HUC 12 or smaller	Flow and Concentration	Variable	Answering specific questions; local interest	Variable, project specific	Variable, project specific	Variable, project specific. Volunteers, others, publically owned wastewater treatment systems
1 - ground	Statewide, stratified by geologic factors and land use	Nitrate concentrations	In development	Broad - identifying spatial patterns, problem areas	Yes	Annually at minimum	DNR/USGS/WGNHS/DATCP
2 - ground	Localized	Nitrate concentration	Variable	Answering specific questions	Variable, project specific	Variable, project specific	Variable, project specific

Chapter 9. Reporting

Element 7. Annual public reporting of implementation activities and biennial reporting of load reductions and environmental impacts associated with each management activity in targeted watersheds

9.1 EPA and Gulf Hypoxia Task Force Expectations

Quoted from EPA's recommended elements:

- "A. Establish a process to annually report for each targeted/priority sub-watershed: status, challenges, and progress toward meeting N & P loading reduction goals, as well as specific activities the state has implemented to reduce N & P loads such as: reducing identified practices that result in excess N & P runoff and documenting and verifying implementation and maintenance of source-specific best management practices.
- "B. Share annual report publically on the state's website with request for comments and feedback for an adaptive management approach to improve implementation, strengthen collaborative local, county, state, and federal partnerships, and identify additional opportunities for accelerating cost effective N & P load reductions."

9.2 Wisconsin's Approach

Wisconsin plans to report on implementation activities and estimated nutrient reductions. Reporting will occur through a new annual forum or summit. This new annual event will highlight key issues and activities related to the strategy, provide a review of new information regarding watershed targeting, tracking, and monitoring, and help establish priorities and actions for partner agencies and organizations for the following year.

Summary information about nutrient reduction and related activities will also be reported through websites and through the biennial Integrated Report to Congress (the 305b Report). Efforts tied to specific programs and funding sources will also be reported through those program's required reporting structures (e.g., EPA 319 accomplishment reporting).

9.3 Future Directions

The first annual report would take place at a summit in June 2014. Options for reporting additional nutrient information through websites are under consideration.

Chapter 10. Numeric Nutrient Water Quality Criteria

Element 8. Develop Work Plan and Schedule for Numeric Criteria Development

10.1 EPA and Gulf Hypoxia Task Force Expectations

Both the EPA Framework and the Gulf Hypoxia Action Plan call for states to develop numeric water quality standards for both phosphorus and nitrogen. EPA has provided further elaboration in its national performance measure WQ-26, where, if a state has not completed adoption of numeric criteria, it must provide a schedule of activities with annual milestones for adoption no later than 2016. That schedule must include milestones for each of these activities:

1. Planning for criteria development
2. Collection of information and data
3. Analysis of information and data
4. Proposal of criteria
5. Adoption of criteria into the state's or territory's water quality standards (related to measure WQ-1a)

WQ-26 implies that states may have the option to scientifically justify that criteria are not needed for certain waters, such as phosphorus criteria are sufficient and nitrogen criteria are not needed.

10.2 Wisconsin's Approach and Future Directions

Phosphorus Criteria

In 2010, the Wisconsin Department of Natural Resources adopted numeric phosphorus water quality standards criteria for three categories of waters: rivers and streams; lakes and reservoirs; and nearshore and open waters of the Great Lakes within Wisconsin jurisdiction. These numeric phosphorus water quality criteria were approved by EPA in December 2010 and met the EPA imposed deadline of December 31, 2010.

The table below shows the adopted phosphorus water quality standards criteria by type of water body. The specific water body types are defined in the s. NR 102.06, Wis. Adm. Code.

Adopted Phosphorus Criteria by Type of Water Body	Total Phosphorus in $\mu\text{g/L}$
NR 102.06 listed rivers	100
All other streams	75
Stratified reservoirs	30
Non-stratified reservoirs	40
Stratified "two-story" fishery lakes	15
Stratified drainage lakes	30
Non-stratified (shallow) drainage lakes	40

Stratified seepage lakes	20
Non-stratified (shallow) lakes	40
Impoundments	Same as inflowing river or stream
Lake Michigan open and nearshore waters	7
Lake Superior open and nearshore waters	5
Note: There are some exclusions, such as lakes under 5 acres and ephemeral streams	

The adopted criteria for streams and rivers were based primarily on two peer-reviewed published reports by the U. S. Geological Survey and the Wisconsin Department of Natural Resources: "Nutrient Concentrations and Their Relations to Biotic Integrity of Wadeable Streams in Wisconsin" (USGS Professional Paper 1722, 2006) and "Nutrient Concentrations and Their Relations to Biotic Integrity of Nonwadeable Rivers in Wisconsin" (USGS Professional Paper 1754, 2008). These research studies analyzed the relations between phosphorus and nitrogen and biotic indices, such as those for fish and aquatic insects. In general, the studies showed stronger relations for phosphorus than nitrogen, but there appeared to be an influence on biotic integrity from nitrogen.

Nitrogen Criteria – Surface Waters

EPA maintains a position that states must develop both phosphorus and nitrogen water quality standards criteria "unless the state provides a strong technical and scientific justification, considering both local and downstream effects, that one or the other is not needed" (EPA WQ-26). Where a state has not completed adoption of numeric nutrient criteria, EPA requires the state to provide a full set of performance measure milestone information for adopting numeric criteria (EPA WQ-26). Each year the state must report on progress for adopting criteria for at least one class of water, such as streams, lakes or estuaries, by 2016.

EPA has identified the following key activities and requires milestones be established for each of the activities:

1. Planning for criteria development
2. Collection of information and data
3. Analysis of information and data
4. Proposal of criteria
5. Adoption of criteria into the state's water quality standards.

Each of these activities is briefly described below.

1. Planning for criteria development -- completed

As mentioned above, the wadeable stream and non-wadeable river studies were designed to analyze the relations of both phosphorus and nitrogen on biotic indicators. Water quality samples were collected and analyzed for both phosphorus and nitrogen.

In 2011, the Department of Natural Resources convened a work group of technical experts from the Department, USGS, EPA and the University of Wisconsin to review previous work and identify any additional study needs. The work group recommended that additional information be collected on streams with relatively higher nitrogen concentrations and lower phosphorus concentrations. A working list of 15 to 20 of these streams was prepared.

2. Collection of information and data -- completed

In 2011 and 2012, water chemistry and biotic data was collected on the selected streams. Laboratory analysis of the collected samples was completed in late 2012.

3. Analysis of information and data – planned to be completed July 2014

Statistical analysis and expert review of the data is planned for 2013 and possibly extending into 2014. The data from the new sites will be assessed both as a group and as part of the previously compiled data set on about 240 Wadeable streams. The scientific review will include analysis of the strength of relations between nitrogen and biotic indices and conform to the suite of EPA guidance.

4. Proposal of criteria

Whether the Department of Natural Resources proposes criteria or pursues the option of showing that nitrogen criteria are not needed will be determined after the scientific analysis in the step 3 above is completed.

5. Adoption of criteria

Any proposed criteria will need to go through Wisconsin's process for adoption of administrative rule development. Generally, this includes approval from the Natural Resources Board and Governor to pursue rule development, convening of a stakeholder advisory committee, presentation of proposed rules for public comment, development of an economic impact analysis, approval by the Natural Resources Board, legislative review and approval by EPA. Often this is at least a three year process. Included in the review process is an assessment of whether nearby states have adopted similar water quality standards criteria.

Nitrogen Standards – Groundwater and Drinking Water

Wisconsin has adopted nitrogen water quality standards for groundwater and drinking water. Specifically, ch. NR 140, Wis. Adm. Code, includes a concentration of 10 mg/L nitrate (expressed as N) as the enforcement standard for groundwater. Similarly, ch. NR 809, Wis. Adm. Code identifies a nitrate concentration of 10 mg/L as a maximum contaminant level for drinking water. Chapter NR 809 also identifies 1 mg/L as a maximum contaminant level for nitrite.

Appendix 1. Wisconsin's Nutrient Reduction Strategy HUC 10 Data Table

The following table contains summary information for all HUC 10s in Wisconsin. The table rows are divided by major basin: Lake Superior (listed first), Lake Michigan (listed second), and Mississippi River (listed third). The table includes thirteen columns with information about each HUC 10 watershed. Below is a column-by-column description.

Columns 1 and 2 are watershed identifiers.

1. HUC 10 Code. The federal Hydrologic Unit Classification 10-digit number for the watershed. HUC 10s do span state boundaries and some have very small areas in Wisconsin.
2. HUC 10 Name. The federal Hydrologic Unit Classification 10-digit watershed official name.

Columns 3 (“% agriculture”) through 8 (“Contains ORW/ERW Water”) provide contextual information about each watershed to supplement the ranking information in columns 9 through 13.

3. % Agriculture. The percent of the land area within the HUC 10 watershed in agricultural use (source: Wisconsin statewide GIS land cover and hydrography data sets)
4. % Urban. The percent of the land area within the HUC 10 watershed in urban use (source: Wisconsin statewide GIS land cover and hydrography data sets)
5. PRESTO PS NPS Ratio. The percent of the phosphorus contribution within the HUC 10 watershed estimated from point sources and nonpoint sources using the Pollutant Load Ratio Estimation Tool (PRESTO). The wastewater point source information is from the 2009-2011 Discharge Monitoring Reports submitted by the facilities. The nonpoint source contribution is based on a suite of models with the middle range result used. The values are expressed as percentages.
6. Contains Nutrient/Sediment Impaired Water. Identifies if the HUC 10 watershed includes a water body listed as impaired for nutrients or sediments. Information is based on the 2012 303(d) list. Since sediment impaired waters generally require similar management of phosphorus impaired waters, they are also included as reference information. In a few cases, bacteria impaired waters are included. None of the waters are impaired due to total nitrogen.
7. Within Approved TMDL. Identifies if the HUC 10 watershed is within the basin or watershed included in an EPA approved TMDL.
8. Contains ORW/ERW Water. Identifies if the HUC 10 watershed contains a state Outstanding Resource Water (ORW) or Exceptional Resource Water (ERW).

Columns 9A through 12 contain ranking information separately for phosphorus and nitrogen. HUC 10s with only a few square miles in Wisconsin are not given values and are marked "na". For these columns, HUC 10 watersheds in the Lake Superior Basin were not ranked (see additional notes below).

9. TP Yield Decile (SPARROW Model). This column has two parts. Both are based on phosphorus attributes of the USGS SPARROW model for nonpoint sources. Yields are loads per unit area, such as pounds per acre per average year. The left part ("Incr.") contains the incremental yield for use when considering local impacts. The right part ("Del'd") contains the delivered yield for use when considering transport of phosphorus to downstream waters, such as the Mississippi River or Lake Michigan. All values are expressed in deciles. For example, the highest 10% are in decile 10, while the lowest 10% are in decile 1. HUC 10 watersheds in the Lake Superior Basin were not ranked as the decile range is comparable to deciles 1-4 for Lake Michigan and Mississippi River.
10. TP Concentration Decile (monit'd). This column uses monitored stream information to rank HUC 10 watersheds based on median growing season phosphorus concentrations. Deciles are based on highest to lowest concentrations. Over 80% of the information is from a 2006 to 2011 DNR rotation watershed study of watersheds (described in chapter 8) where, if practical, the downstream "pour" point was measured. A minimum of four samples was needed to use the information. For about 10% of the HUC 10 watersheds, information from similar studies was used. For the remaining HUC 10s, results were extrapolated from similar, nearby HUC 10s. For deciles 1 through 4, the median concentrations were less than the Wisconsin water quality standards criterion for phosphorus. HUC 10 watersheds in the Lake Superior Basin were not ranked as the decile range is comparable to deciles 1-4 for Lake Michigan and Mississippi River.
11. TN Yield Decile (SPARROW Model). This column has two parts. Both are based on nitrogen attributes of the USGS SPARROW model for nonpoint sources. Yields are loads per unit area, such as pounds per acre per average year. The left part ("Incr.") contains the incremental yield for use when considering local impacts. The right part ("Del'd") contains the delivered yield for use when considering transport of nitrogen to downstream waters, such as the Mississippi River or Lake Michigan. All values are expressed in deciles. For example, the highest 10% are in decile 10, while the lowest 10% are in decile 1. HUC 10 watersheds in the Lake Superior Basin were not ranked as the decile range is comparable to deciles 1-4 for Lake Michigan and Mississippi River.
12. TN Concentration Decile (monit'd). This column uses monitored stream information to rank HUC 10 watersheds based on median growing season total nitrogen concentrations. Deciles are based on highest to lowest concentrations. Over 80% of the information is from a 2006 to 2011 DNR rotation watershed study of watersheds (described in chapter 8) where, if practical, the downstream "pour" point was measured. A minimum of four samples was needed to use the information. For about 10% of the watersheds, only nitrite-nitrate results were used due to the lack of laboratory results for Total Kjeldahl Nitrogen. For about 5% of the HUC 10 watersheds, information from similar studies was used. For the remaining HUC 10s, results were extrapolated from similar, nearby HUC 10s. HUC 10 watersheds in

the Lake Superior Basin were not ranked as the decile range is comparable to deciles 1-4 for Lake Michigan and Mississippi River.

13. Column 13, the last column, deals with safe drinking water nutrient impacts. The deciles are based on the number and frequency of public drinking water wells located in the HUC 10 watershed with nitrate concentrations exceeding 5 mg/L based on samples from the wells reported to DNR. A HUC 10 ranking high would have a number of public wells with a high percent with nitrate levels exceeding 5 mg/L. A HUC 10 ranking low could have low concentrations, few wells or only a small number of the wells with concentrations exceeding 5 mg/L.

HUC 10 CODE	HUC 10 NAME	% Agr	% Urban	PRESTO PS NPS Ratio	Contains Nutrient/Se diment Impaired Water	Within App'd TMDL	Contains ORW/ ERW Water	TP Yield Decile (SPARROW Model) (1)		TP Conc Decile (Monit'd)	TN Yield Decile (SPARROW Model) (1)		TN Conc Decile (Monit'd)	Safe Drinking Water Nutrient Impacts
								Incr.	De/d		Incr.	De/d		
	Lake Superior Basin													
0401020116	St. Louis River	2	19	25:75			Yes			1-4			1-3	1
0401030101	South Fork Nemadji River	13	3	0:100						1-4			1-3	1
0401030102	Upper Nemadji River	-	-	0:100						1-4			1-3	1
0401030103	Black River	4	2	0:100			Yes			1-4			1-3	1
0401030104	Middle Nemadji River	8	3	0:100	Yes		Yes			1-4			1-3	1
0401030105	Lower Nemadji River	15	9	0:100	Yes		Yes			1-4			1-3	1
0401030106	Amnicon River-Frontal Lake Superior	12	4	0:100			Yes			1-4			1-3	1
0401030107	Bois Brule River	2	5	2:98			Yes			1-4			1-3	1
0401030108	Iron River-Frontal Lake Superior	8	6	5:95			Yes			1-4			1-3	1
0401030109	Bayfield Pen NW-Frontal L Superior	3	4	1:99			Yes			1-4			1-3	1
0401030110	Bayfield Peninsula SE-Fr Lake Superior	4	4	0:100			Yes			1-4			1-3	1
0401030111	Fish Creek-Frontal Chequamegon Bay	18	6	0:100			Yes			1-4			1-3	1
0401030201	Montreal River	2	5	4:96			Yes			1-4			1-3	1
0401030202	Tyler Forks	2	3	0:100			Yes			1-4			1-3	1
0401030203	Headwaters Bad River	1	4	3:97			Yes			1-4			1-3	1
0401030204	Marengo River	12	4	0:100			Yes			1-4			1-3	1
0401030205	Potato River	4	3	0:100			Yes			1-4			1-3	1
0401030206	White River	6	3	0:100			Yes			1-4			1-3	1
0401030207	Bad River	2	2	0:100						1-4			1-3	1
0402010102	Black River	-	2	0:100						1-4			1-3	1
0402010103	Presque Isle River	0	5	0:100						1-4			1-3	3
0402010201	South Branch Ontonagon River	0	4	0:100						1-4			1-3	1
	Lake Michigan Basin													
0403010101	East Twin River-Frontal Lake Michigan	70	7	0:100			Yes	7	8	5	10	10	8	5
0403010102	West Twin River	73	8	3:97	Yes			10	10	5	9	9	7	6
0403010103	North Branch Manitowoc River	73	7	7:93	Yes			10	10	10	10	10	9	1
0403010104	South Branch Manitowoc River	70	7	7:93	Yes			9	9	10	9	9	9	10
0403010105	Branch River	75	6	2:98			Yes	9	10	6	9	9	10	8
0403010106	Manitowoc River-Frontal Lake Michigan	62	12	5:95	Yes		Yes	7	8	9	8	9	9	9
0403010107	Sevenmile & Silver Crs-Frontal L Mich	75	10	1:99	Yes			9	9	9	10	10	8	1
0403010108	Pigeon River	71	11	4:96				10	10	8	10	10	10	1
0403010109	Mullet River	56	10	32:68			Yes	6	7	8	10	10	9	1
0403010110	Ontonagon River	76	7	21:79	Yes		Yes	7	7	8	8	8	5	6
0403010111	Sheboygan River-Frontal Lake Michigan	60	11	12:88	Yes		Yes	8	8	10	10	10	7	1
0403010112	Black R, Sauk & Sucker Crs-Frl L Mich	67	17	10:90				5	6	1	4	7	9	7
0403010201	Upper Door Peninsula	41	9	3:97			Yes	8	9	7	7	8	7	5
0403010202	Ahnapee River and Stony Creek	70	6	2:98	Yes			10	10	4	10	10	8	4
0403010203	Kewaunee River	78	6	1:99			Yes	8	9	7	7	8	10	3
0403010204	Red River and Sturgeon Bay	60	8	0:100			Yes	7	8	7	7	8	4	1
0403010301	Pensaukee River-Frontal Green Bay	51	6	1:99				5	7	9	7	8	6	1
0403010302	Suamico & L. Suamico Rs-F Green Bay	60	8	0:100				2	4	2	3	5	1	5
0403010401	South Branch Oconto River	9	4	0:100			Yes	2	4	3	2	4	3	4
0403010402	North Branch Oconto River	5	4	7:93			Yes	2	4	3	2	4	3	4

HUC 10 CODE	HUC 10 NAME	% Aq	% Urban	PRESTO PS NPS Ratio	Contains Nutrient/Se diment Impaired Water	Within App'd TMDL	Contains ORW/ ERW Water	TP Yield Decile (SPARROW Model) (1)		TN Conc Decile (Monit'd)		TP Conc Decile (Monit'd)		TN Yield Decile (SPARROW Model) (1)		Safe Drinking Water Nutrient Impacts
								Incr.	Del'd	Incr.	Del'd	Incr.	Del'd	Incr.	Del'd	
0403010403	Peshtigo Brook	7	4	0:100				2	4	3	3	2	5	5	5	2
0403010404	Little River	55	5	1:99				7	8	7	4	6	7	4	4	1
0403010405	Oconto River	38	8	2:179			Yes	5	6	4	4	5	7	5	5	4
0403010501	Rat River	3	3	6:94			Yes	2	3	3	3	2	2	1	1	1
0403010502	Upper Peshtigo River	5	3	0:100			Yes	2	3	3	3	2	3	1	1	1
0403010503	Middle Inlet-Lake Noguebay	14	5	0:100			Yes	1	2	1	1	3	3	2	3	3
0403010504	Middle Peshtigo River	4	4	1:89			Yes	2	4	2	3	1	2	3	3	6
0403010505	Little Peshtigo River	42	5	5:95			Yes	4	6	6	5	5	7	5	7	7
0403010506	Lower Peshtigo River	31	8	7:93				4	6	6	7	4	6	7	2	2
0403010601	North Branch Paint River	-	-	0:100				na	na	na	3	1	1	3	1	1
0403010603	Iron River-Brule River	1	3	0:100			Yes	3	4	2	2	1	1	2	2	1
0403010605	Brule River	7	3	0:100			Yes	1	3	2	2	2	3	2	2	1
0403010801	Popple River	2	2	0:100			Yes	1	3	2	2	1	2	2	2	1
0403010802	Pine River	2	2	0:100			Yes	2	3	1	1	2	2	2	2	2
0403010805	Pemebowon River	4	4	0:100			Yes	1	2	1	1	1	3	1	1	8
0403010806	Pike River	3	4	0:100			Yes	1	3	1	1	2	3	1	1	1
0403010807	Squaw Creek-Menominee River	9	5	48:52			Yes	4	5	3	2	2	3	2	2	4
0403010809	Menominee River	13	6	33:67			Yes	2	4	3	3	3	5	1	1	3
0403020101	Swan Lake-Fox River	63	6	0:100				5	4	1	10	7	4	4	10	9
0403020102	Neenah Creek	49	5	10:90	Yes		Yes	4	2	4	4	6	4	5	5	7
0403020103	Montello River	42	6	13:87			Yes	3	1	7	7	4	2	7	7	9
0403020104	Upper Grand River	81	6	33:67				9	6	9	10	9	6	10	10	9
0403020105	Lower Grand River	62	4	0:100				5	5	7	10	6	5	10	10	8
0403020106	Buffalo and Puckaway Lakes-Fox River	42	6	6:94				4	2	6	5	5	3	5	5	8
0403020107	Mecan River	38	5	0:100	Yes			3	1	2	8	4	3	8	4	4
0403020108	White River	37	7	13:87			Yes	3	2	3	7	4	4	7	8	7
0403020109	Big Green Lake	63	8	12:88	Yes		Yes	7	1	4	10	5	1	10	6	6
0403020110	Rush Creek	67	4	0:100			Yes	7	6	8	8	9	7	8	7	7
0403020111	City of Berlin-Fox River	54	5	20:80	Yes		Yes	5	5	4	5	7	6	5	5	5
0403020112	Lake Butte des Mortes	56	19	57:43	Yes		Yes	8	6	10	7	8	6	7	2	2
0403020201	Swamp Creek	4	4	0:100			Yes	1	1	3	2	1	1	2	2	5
0403020202	Lily River	5	4	0:100			Yes	1	1	2	1	2	1	1	1	6
0403020203	Evergreen River-Wolf River	7	4	0:100			Yes	2	1	3	3	2	1	3	3	5
0403020204	West Branch of the Wolf River	9	4	0:100			Yes	3	1	2	3	3	1	3	3	3
0403020205	Red River	24	4	6:94			Yes	3	2	2	3	4	2	3	3	8
0403020206	Shawano Lake	29	9	0:100			Yes	4	3	6	4	3	2	3	3	3
0403020207	Legend Lake-Wolf River	6	5	0:100			Yes	3	2	4	4	3	2	4	4	
0403020208	Shioc River	65	6	4:96			Yes	8	6	10	8	8	6	8	2	2
0403020209	School Section Creek-Wolf River	38	6	28:72			Yes	6	5	5	9	6	5	9	2	2
0403020210	Middle & South Branches Embarrass R	32	6	6:94			Yes	5	4	5	4	4	3	4	4	9
0403020211	Pigeon River	47	7	20:80			Yes	6	5	8	9	6	5	9	9	8
0403020212	North Branch & Mainstem Embarrass R	38	5	11:89			Yes	5	4	5	5	5	4	5	5	9
0403020213	Bear Creek-Embarrass River	62	5	2:98	Yes		Yes	9	6	9	6	8	6	6	6	5
0403020214	Bear Creek-Wolf River	59	10	16:84			Yes	10	7	9	9	3	6	9	1	1
0403020215	Flume Creek-Little Wolf River	32	4	0:100			Yes	3	2	4	4	3	2	6	6	9
0403020216	South Branch of the Little Wolf River	41	5	12:88			Yes	4	3	4	4	4	3	4	8	5
0403020217	Blake Creek-Little Wolf River	50	5	1:99			Yes	6	5	4	6	6	5	6	6	7

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								Incr.	De/d		Incr.	De/d		
0403020218	Waupaca River	51	7	21:79			Yes	4	3	5	5	4	6	10
0403020219	Partridge Lake-Wolf River	47	6	16:84			Yes	6	5	6	6	4	8	5
0403020220	Willow Creek-Pine River	44	5	14:86	Yes	Yes	Yes	4	2	5	5	4	4	6
0403020221	Lake Poygan	57	6	6:94	Yes		Yes	5	5	9	7	5	8	8
0403020301	West Shore of Lake Winnebago	65	23	0:100	Yes		Yes	9	7	7	5	5	1	2
0403020302	Fond du Lac River	65	10	8:92	Yes	Yes	Yes	8	7	10	9	7	10	3
0403020303	East Shore of Lake Winnebago	65	17	4:96	Yes		Yes	na	na	na	na	1	na	7
0403020304	Lake Winnebago (2)	0	0	na	Yes		Yes	10	9	8	8	8	4	1
0403020401	Duck Creek-Frontal Green Bay	60	16	2:98	Yes	Yes		10	10	10	8	9	6	1
0403020402	Plum Creek-Fox River	43	40	70:30	Yes	Yes		10	10	10	9	9	5	1
0403020403	East River	65	20	3:97	Yes	Yes	Yes	10	10	10	9	9	6	1
0403020404	Fox River-Frontal Green Bay	55	30	53:47	Yes	Yes		10	10	10	9	9	6	1
0404000201	Oak Creek-Frontal Lake Michigan	10	61	89:11	Yes			7	8	5	4	7	3	1
0404000202	Root River Canal	78	8	11:89	Yes			8	9	8	10	10	2	1
0404000203	Root River	35	42	7:93	Yes	Yes		8	9	8	3	6	2	1
0404000204	Pike River-Frontal Lake Michigan	32	47	43:57	Yes			8	9	7	3	9	7	1
0404000205	Waukegan River-Frontal Lake Michigan	26	32	0:100			Yes	na	na	na	na	1	na	1
0404000301	North Branch Milwaukee River	65	6	13:86	Yes			6	7	7	9	9	9	2
0404000302	East & West Brs Milwaukee R-Milw R	52	10	23:77			Yes	6	7	5	6	8	7	8
0404000303	Cedar Creek	55	14	31:69				6	8	6	7	8	6	7
0404000304	Menomonee River	18	61	66:34	Yes			9	9	6	3	6	9	5
0404000305	Kinnickinnic River	-	83	31:69	Yes			9	10	6	4	7	3	1
0404000306	Milwaukee River-Frontal Lake Michigan	29	45	29:71	Yes			7	8	8	6	8	6	2

(1) The SPARROW incremental yield should be used when considering nutrient contributions to nearby waters. The SPARROW delivered yield should be used when considering nutrient contributions to Lake Michigan

(2) The Lake Winnebago HUC 10 only consists of the lake itself.

"na" is used when the HUC 10 has less than a few square miles of land in Wisconsin

Phosphorus concentrations less than the water quality standards criterion of 0.075 mg/L (75 ug/L) are in italics

Mississippi River Basin															
07030000101	Upper St. Croix-Eau Claire Rivers	1	6	0:100		Yes	Yes	1	1	1	1	1	1	1	1
07030000102	Moose River-Saint Croix River	1	3	0:100		Yes	Yes	2	2	2	2	2	3	1	1
07030000103	Upper Tamarack River	1	2	0:100		Yes	Yes	3	3	2	2	2	1	1	1
07030000104	Sheil Lake-Yellow River	24	7	1:99		Yes	Yes	2	2	4	2	2	3	1	1
07030000105	Yellow Lake-Yellow River	7	6	0:100	Yes	Yes	Yes	2	1	2	2	2	1	5	5
07030000106	Lower Tamarack River	0	1	0:100		Yes	Yes	2	2	2	2	2	1	1	1
07030000108	North Fork of the Clam River	28	4	0:100		Yes	Yes	3	3	5	1	1	1	2	2
07030000109	Clam River	18	5	2:98	Yes	Yes	Yes	3	3	4	3	3	1	1	1
07030000112	Chases Brook-Saint Croix River	4	4	0:100		Yes	Yes	2	2	3	2	2	3	1	1
07030000201	Upper Namekagon River	4	5	0:100		Yes	Yes	1	1	1	2	2	1	3	3
07030000202	Trego Lake-Namekagon River	9	6	0:100		Yes	Yes	2	2	1	2	2	1	2	2
07030000203	Totagatic River	2	4	0:100		Yes	Yes	1	1	2	1	1	1	1	1
07030000204	Namekagon River	5	5	0:100		Yes	Yes	1	1	1	2	2	1	1	1
07030000501	Wood River	28	5	13:87		Yes	Yes	2	2	4	3	3	1	3	3

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								Incr.	Dec'd		Incr.	Dec'd		
0703000502	Goose Creek-Saint Croix River	1	4	0:100		Yes	Yes	1	1	2	2	2	3	1
0703000505	Trade River	28	5	4:96		Yes	Yes	3	3	2	3	3	1	1
0703000506	Wolf Creek-Saint Croix River	44	4	0:100		Yes	Yes	3	4	3	4	4	3	3
0703000507	Beaver Brook-Apple River	37	5	6:94		Yes	Yes	3	4	5	4	4	5	6
0703000508	Balsam Branch-Apple River	48	6	7:93	Yes	Yes	Yes	3	3	5	4	4	3	8
0703000509	Big Marine Lake-Saint Croix River	45	7	58:42		Yes	Yes	5	5	3	4	4	7	8
0703000510	Willow River	55	7	3:97	Yes	Yes	Yes	6	6	6	5	6	8	10
0703000511	Kinnickinnic River	73	8	8:92		Yes	Yes	7	6	3	7	7	9	10
0703000512	Lake Saint Croix	45	14	71:29	Yes	Yes	Yes	5	5	3	4	5	9	8
0704000101	Big River-Mississippi River	65	6	4:96	Yes		Yes	7	7	3	6	7	8	9
0704000103	Trimble River	63	6	0:100	Yes		Yes	5	5	3	na	na	na	10
0704000104	Hay Creek-Mississippi River	31	16	45:55	Yes		Yes	na	na	na	8	8	9	9
0704000105	Rush River	70	7	5:95			Yes	8	8	1	6	6	8	7
0704000107	Lake Pepin	47	6	7:93				8	8	1	7	7	7	8
0704000301	Harvey Creek-Buffalo River	52	6	1:99	Yes		Yes	6	6	10	7	7	8	2
0704000302	Elk Creek-Buffalo River	43	4	0:100				7	7	10	8	8	6	6
0704000304	Waumandee Creek	41	4	0:100	Yes	Yes		5	6	10	5	5	6	7
0704000306	City of Winona-Mississippi River	18	5	9:91	Yes	Yes		6	6	10	7	8	6	4
0704000501	Pigeon Creek	50	5	0:100			Yes	5	5	10	6	7	7	4
0704000502	Upper Trempealeau River	45	5	3:97	Yes	Yes		7	7	10	8	8	7	7
0704000503	Elk Creek	54	4	0:100				9	8	9	8	9	8	1
0704000504	Middle Trempealeau River	56	5	2:98	Yes	Yes		8	8	9	7	8	5	8
0704000505	Lower Trempealeau River	48	4	6:94	Yes	Yes		5	6	10	4	5	7	10
0704000601	Halfway Creek-Mississippi River	29	11	20:80	Yes		Yes	4	4	4	4	4	2	5
0704000602	Upper La Crosse River	14	8	3:97	Yes	Yes		6	7	7	5	6	7	4
0704000603	Middle La Crosse River	46	6	6:94	Yes	Yes		7	7	8	4	5	5	3
0704000604	Lower La Crosse River	38	11	3:97	Yes	Yes		5	5	3	4	4	5	2
0704000605	Pine Creek-Mississippi River	3	42	94:6				5	5	7	4	4	5	2
0704000701	Black-Little Black Rivers	36	6	8:92				10	10	10	9	9	4	6
0704000702	Popple River	68	5	9:91				9	9	5	10	10	4	10
0704000703	Trappers-Pine Creeks-Black River	45	4	7:93				3	4	4	4	4	3	4
0704000704	Rock Creek-Black River	68	5	2:98				10	10	9	10	10	4	10
0704000705	Wedges Creek	20	4	0:100				3	4	4	4	4	3	4
0704000706	East Fork of the Black River	13	3	0:100				2	3	3	3	3	3	1
0704000707	Morrison Creek	3	4	0:100			Yes	1	1	2	2	2	2	3
0704000708	Halls Creek	38	5	1:99			Yes	3	4	1	5	6	7	4
0704000709	Lake Arbuthus-Black River	47	5	4:96	Yes		Yes	9	8	9	7	7	4	3
0704000710	Robinson Creek-Black River	15	7	5:95	Yes		Yes	2	3	5	3	4	3	5
0704000711	Beaver Creek	41	5	4:96	Yes	Yes	Yes	6	6	9	6	7	6	4
0704000712	Fleming Creek-Black River	34	5	1:99	Yes	Yes		4	4	10	5	5	7	10
0705000101	West Fork Chippewa River	0	3	0:100	Yes		Yes	2	1	2	2	1	1	1
0705000102	East Fork Chippewa River	2	3	0:100	Yes		Yes	2	2	3	2	2	1	1
0705000103	Lake Chippewa	2	3	0:100	Yes		Yes	1	1	1	1	1	2	4
0705000104	Couderay River	9	5	0:100	Yes		Yes	2	2	1	2	2	1	4
0705000105	Brunet River-Chippewa River	8	3	0:100	Yes		Yes	3	3	2	3	3	2	1
0705000106	Thornapple River	5	2	0:100	Yes		Yes	3	3	3	2	3	3	3
0705000107	Soft Maple Creek-Chippewa River	19	4	1:99	Yes	Yes	Yes	3	3	4	3	3	2	6

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								Incr.	Del'd		Incr.	Del'd		
0705000108	Deer Tail Creek	30	5	1:99				5	5	5	4	4	3	1
0705000109	Holcolombe Flowage-Chippewa River	14	4	0:100			Yes	3	3	6	3	3	4	7
0705000201	Manitowish River	0	5	0:100			Yes	1	1	1	1	1	1	5
0705000202	Bear River	1	5	0:100			Yes	1	1	1	1	1	2	2
0705000203	Flambeau Flowage-Headwaters Flambeau River	0	3	0:100			Yes	2	1	1	1	1	1	2
0705000204	Butternut Creek	10	4	0:100	Yes		Yes	3	3	2	2	2	2	1
0705000205	Upper Flambeau River	4	3	59:41			Yes	6	6	2	2	2	4	2
0705000206	Middle Flambeau River	1	2	0:100			Yes	2	2	2	2	2	2	1
0705000207	Lower Flambeau River	13	6	48:52			Yes	4	5	9	3	3	5	2
0705000301	Elk River	9	3	11:89	Yes		Yes	2	1	2	2	2	3	4
0705000302	Headwaters South Fork Flambeau River	2	3	0:100			Yes	1	1	2	1	1	3	3
0705000303	South Fork Flambeau River	4	2	3:97			Yes	2	2	4	2	2	4	1
0705000401	South Fork Jump River	7	3	4:96			Yes	3	3	5	2	2	3	1
0705000402	North Fork Jump River	13	3	2:98			Yes	4	4	8	3	3	3	1
0705000403	Main Creek	26	4	1:99			Yes	5	5	4	4	4	3	1
0705000404	Lower Jump River	22	3	1:99	Yes		Yes	4	4	4	3	3	4	3
0705000501	Fisher River-Chippewa River	35	4	7:93			Yes	5	5	6	5	5	4	7
0705000502	Upper Yellow River	19	3	1:99			Yes	4	4	6	3	3	4	1
0705000503	Lake Wisconsin	46	5	1:99	Yes	Yes	Yes	5	5	7	6	6	1	10
0705000504	Duncan Creek	68	8	2:98			Yes	8	8	9	8	8	4	10
0705000505	Trout Creek-Chippewa River	41	27	59:41			Yes	2	2	9	5	6	4	8
0705000506	Elk Creek	62	6	0:100			Yes	4	4	10	5	6	8	9
0705000507	Lowes Creek-Chippewa River	47	14	40:60	Yes	Yes	Yes	8	8	10	5	5	6	9
0705000508	Muddy Creek-Chippewa River	63	6	12:88	Yes			4	4	10	6	6	8	8
0705000509	Muddy Creek-Chippewa River	55	5	0:100				3	4	10	6	6	8	9
0705000510	Eau Galle River	61	6	6:94	Yes		Yes	4	5	6	4	4	5	5
0705000511	Plum Creek	58	5	1:99				5	6	6	8	8	7	3
0705000512	Bear Creek-Chippewa River	40	4	4:96	Yes			5	5	6	1	2	8	8
0705000601	North Fork Eau Claire River	52	5	4:96	Yes		Yes	7	6	5	7	6	4	5
0705000602	South Fork Eau Claire River	32	3	1:99	Yes	Yes		5	5	3	5	5	2	6
0705000603	Hay Creek-Eau Claire River	26	4	0:100			Yes	3	3	7	3	3	4	7
0705000604	Otter Creek	61	13	0:100				4	4	10	5	5	3	7
0705000605	Eau Claire River	46	7	1:99			Yes	4	4	6	4	5	5	9
0705000701	Red Cedar Lake	7	4	0:100		Yes	Yes	2	2	3	1	1	2	3
0705000702	Yellow River	54	6	2:98		Yes	Yes	7	7	7	6	6	7	5
0705000703	Brill River-Red Cedar River	35	7	8:92	Yes	Yes	Yes	4	4	4	3	3	3	8
0705000704	Lake Chetek	34	6	2:98	Yes	Yes	Yes	1	1	8	1	1	1	10
0705000705	South Fork of the Hay River	61	5	2:98		Yes		6	5	4	6	6	7	7
0705000706	Hay River	51	5	3:97		Yes	Yes	6	6	7	6	5	5	8
0705000707	Lower Pine Creek-Red Cedar River	57	5	2:98	Yes	Yes	Yes	5	5	8	7	6	9	10
0705000710	Lake Menominee-Red Cedar River	53	8	7:93	Yes	Yes		5	5	7	6	6	6	7
0706000101	Coon Creek	48	5	3:97			Yes	8	9	7	6	7	6	6
0706000103	Bad Axe River	56	6	7:93			Yes	9	9	6	7	8	6	7
0706000105	Mormon Creek-Mississippi River	29	5	5:95				7	7	3	4	5	5	5
0706000107	Rush Creek-Mississippi River	34	4	1:99	Yes		Yes	8	8	4	5	6	6	3
0706000110	Bloody Run-Mississippi River	24	9	32:68	Yes		Yes	8	9	4	4	5	5	1
0706000301	Upper Grant River	77	6	1:99	Yes	Yes	Yes	10	10	6	9	9	10	5

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								Incr.	Del'd		Incr.	Del'd		
0706000302	Middle Grant River	81	7	3:97				10	10	7	10	10	9	3
0706000303	Lower Grant River	77	5	0:100				10	10	8	10	10	10	5
0706000304	Little Platte River	82	7	2:98	Yes	Yes	Yes	10	10	8	10	10	10	8
0706000305	Platte River	76	5	1:99	Yes	Yes	Yes	10	10	6	10	10	9	3
0706000307	Sny Magill Creek-Mississippi River	38	5	6:94	Yes			10	10	5	7	8	8	4
0706000502	Sinsinawa River-Mississippi River	85	7	1:99	Yes			10	10	4	10	10	10	7
0706000503	Galena River	87	6	5:94	Yes			10	10	4	10	10	10	2
0706000505	South Fork Apple River-Apple River	93	4	0:100				10	10	4	10	10	10	1
0707000101	Deerskin River	2	4	11:89	Yes		Yes	1	1	2	1	1	1	1
0707000102	Eagle River	2	5	14:86	Yes		Yes	1	1	1	1	1	2	5
0707000103	Pioneer Creek-Wisconsin River	2	5	0:100	Yes		Yes	1	1	2	1	1	2	2
0707000104	Rainbow Flow-Mud Creek-Wisconsin R	4	4	0:100	Yes		Yes	1	1	3	1	1	2	7
0707000105	Gillmore Creek-Big St. Germain River	0	6	0:100	Yes		Yes	1	1	2	1	1	2	8
0707000106	Rhineland Flowage-Upper Wisconsin R	4	5	8:92	Yes		Yes	1	1	1	1	1	2	5
0707000107	Pelican River	4	4	0:100	Yes		Yes	2	1	3	1	1	1	5
0707000108	Upper Tomahawk River	2	6	8:92	Yes		Yes	1	1	3	1	1	2	5
0707000109	Middle Tomahawk River	2	2	0:100	Yes		Yes	1	1	2	1	1	2	3
0707000110	Lower Tomahawk River	2	4	0:100	Yes		Yes	1	1	1	1	1	1	6
0707000111	Somo River	2	3	0:100	Yes		Yes	2	2	2	1	1	2	2
0707000112	Spirit River	5	3	0:100	Yes		Yes	3	2	5	2	1	1	2
0707000113	Lake Mohawksin-Lake Alice-Wisconsin R	5	6	86:14	Yes		Yes	2	1	2	2	1	2	2
0707000201	New Wood River	1	2	0:100	Yes		Yes	3	2	2	1	1	2	
0707000202	Copper River	12	2	0:100	Yes		Yes	3	3	5	3	2	3	
0707000203	Prairie River	11	5	4:96	Yes		Yes	2	2	3	2	2	2	3
0707000204	Alexander Lake-Wisconsin River	15	5	0:100	Yes		Yes	3	3	4	3	2	4	5
0707000205	Pine River	24	3	0:100	Yes		Yes	3	3	3	3	3	4	1
0707000206	Trappe River	30	4	0:100	Yes		Yes	6	5	3	4	4	4	1
0707000207	Black Creek	59	5	7:93	Yes		Yes	9	9	3	7	5	6	4
0707000208	Wood Creek-Big Rib River	22	4	1:99	Yes		Yes	5	4	4	6	5	2	3
0707000209	Little Rib River	55	6	0:100				6	5	2	6	5	6	9
0707000210	Scotch Creek-Big Rib River	60	9	10:90				8	7	6	8	6	5	8
0707000211	Spring Brook	46	6	30:70	Yes		Yes	4	3	7	8	6	9	10
0707000212	Black Brook-Eau Claire River	24	5	0:100	Yes		Yes	3	2	3	3	3	6	9
0707000213	Big Sandy Creek-Eau Claire River	40	7	0:100	Yes		Yes	5	4	3	5	4	4	9
0707000214	Eau Claire Flowage-Wisconsin River	35	18	62:38	Yes		Yes	10	9	4	5	4	4	6
0707000215	Dill Creek-Big Eau Pleine River	72	6	7:93	Yes		Yes	10	9	10	9	8	5	9
0707000216	Lake Dubay-Big Eau Pleine River	56	5	1:99	Yes		Yes	9	7	8	8	5	3	7
0707000217	Little Eau Pleine River	58	6	6:94				8	7	10	8	6	5	9
0707000218	Lake Dubay-Wisconsin River	26	7	56:44	Yes		Yes	7	6	4	4	3	5	6
0707000301	Plover River	34	8	0:100	Yes		Yes	4	4	1	4	4	7	10
0707000302	Mill Creek	66	8	32:68	Yes		Yes	8	8	9	9	8	1	2
0707000303	City of Stevens Point-Wisconsin River	36	11	75:25	Yes		Yes	7	6	9	5	4	1	9
0707000304	Fourmile Creek	59	10	0:100	Yes		Yes	4	4	1	5	5	10	10
0707000305	Tennile Creek	63	5	0:100	Yes		Yes	3	2	1	5	5	5	10
0707000306	Fourteenmile Creek	46	9	0:100				2	2	1	4	4	3	6
0707000307	Patenwell Lake	19	9	88:12	Yes		Yes	8	7	4	3	3	3	6
0707000308	Big Roche a Cri Creek	35	6	0:100	Yes		Yes	2	2	1	4	5	7	6

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								Incr.	Dec'd.		Incr.	Dec'd.		
0707000309	Little Roche a Cri Creek	33	6	5:95			Yes	2	2	2	4	4	7	4
0707000310	Hemlock Creek	52	5	2:98				4	4	7	4	4	3	1
0707000311	Rocky Creek-Yellow River	59	6	2:98			Yes	8	8	10	7	8	5	4
0707000312	Cranberry Creek	20	5	0:100	Yes			7	6	1	3	3	2	1
0707000313	Mead Marsh-Yellow River	6	5	1:99				1	2	6	1	2	3	3
0707000314	Beaver Creek	4	3	0:100				1	2	5	2	3	4	1
0707000315	Upper Lemonweir River	32	8	2:98	Yes		Yes	4	4	7	3	4	5	10
0707000316	Middle Lemonweir River	38	6	4:96			Yes	3	4	7	5	6	5	2
0707000317	Lower Lemonweir River	49	7	4:96			Yes	4	5	6	6	6	4	6
0707000318	Petenwell Lake	25	6	0:100	Yes		Yes	2	2	3	3	4	7	5
0707000319	Dell Creek-Wisconsin River	36	9	14:86			Yes	4	5	5	4	5	6	10
0707000401	Headwaters of the Baraboo River	52	6	3:96	Yes		Yes	8	8	9	8	8	4	6
0707000402	Little Baraboo River-Baraboo River	60	6	4:96	Yes			9	9	8	8	9	5	4
0707000403	Narrows Creek-Baraboo River	62	7	14:86				9	9	9	9	9	5	9
0707000404	Devil's Lake-Baraboo River	44	9	8:92			Yes	7	7	8	7	8	6	5
0707000501	Duck Creek-Wisconsin River	57	5	6:94			Yes	6	6	5	7	7	8	10
0707000502	Prairie du Sac Dam-Wisconsin River	55	7	15:85	Yes		Yes	7	7	7	6	7	7	9
0707000503	Otter Creek-Wisconsin River	53	8	3:97			Yes	6	6	7	7	8	9	7
0707000504	Honey Creek	55	4	2:98				7	8	8	7	8	8	4
0707000505	Black Earth Creek	55	7	5:95	Yes		Yes	6	6	5	5	5	7	6
0707000506	Blue Mounds Creek	40	5	0:100			Yes	6	7	5	9	9	4	4
0707000507	Trout Creek-Mill Creek	41	5	0:100			Yes	7	8	7	7	8	6	7
0707000508	Otter Creek	50	4	0:100	Yes	Yes	Yes	9	9	5	8	9	6	3
0707000509	Bear Creek	42	4	0:100	Yes		Yes	5	6	9	5	7	6	1
0707000510	Willow Creek	49	4	1:99	Yes	Yes	Yes	6	7	6	7	8	9	1
0707000511	Pine River	48	5	6:94			Yes	9	10	7	6	7	4	5
0707000512	City of Spring Green-Wisconsin River	35	5	4:96	Yes		Yes	5	5	1	5	6	4	10
0707000513	Hoosier Hollow-Mill Creek	47	4	0:100			Yes	7	8	7	7	8	5	2
0707000514	Blue River	56	4	1:99	Yes	Yes	Yes	8	9	8	8	8	9	4
0707000515	Knapp Creek	38	4	0:100			Yes	7	7	5	6	7	5	1
0707000516	Big Green River	48	5	0:100			Yes	8	9	4	7	8	7	1
0707000517	City of Boscobel-Wisconsin River	35	6	2:98			Yes	7	7	3	5	7	7	8
0707000518	Wisconsin River	34	5	0:100			Yes	7	7	4	5	7	6	3
0707000601	Headwaters Kickapoo River	58	5	2:98			Yes	9	10	7	9	9	5	1
0707000602	West Fork Kickapoo River	57	5	0:100			Yes	8	9	4	7	8	6	3
0707000603	Bear Creek-Kickapoo River	43	5	2:98	Yes	Yes	Yes	8	8	9	7	8	5	4
0707000604	Tainter Creek-Kickapoo River	48	6	2:98			Yes	8	9	5	6	7	5	7
0707000605	Kickapoo River	41	4	1:99	Yes		Yes	8	9	5	6	7	7	1
0709000101	East Branch Rock River	72	8	13:87	Yes	Yes		8	7	10	8	6	8	7
0709000102	West Branch Rock River-Rock River	62	6	37:63	Yes	Yes		9	8	10	9	6	7	6
0709000103	Rubicon River	65	13	25:75		Yes		7	6	10	8	8	7	8
0709000104	Sinissippi Lake-Rock River	71	7	17:83	Yes	Yes		8	8	10	8	7	8	2
0709000105	Oconomowoc River	43	18	42:58	Yes	Yes	Yes	3	3	4	7	7	3	8
0709000106	Ashippun River-Rock River	70	8	9:91	Yes			7	7	6	8	7	8	3
0709000107	Headwaters Crawfish River	80	5	3:97		Yes		8	8	7	9	9	9	9
0709000108	Maunsha River	77	7	6:94	Yes	Yes		9	8	9	10	9	8	9
0709000109	Beaver Dam River	72	7	26:74	Yes	Yes		8	6	10	8	6	7	8

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								Incr.	Del'd.		Incr.	Del'd.		
0709000110	Crawfish River	76	7	10:90	Yes	Yes		9	9	10	10	10	8	1
0709000111	Johnson Creek-Rock River	68	10	31:69	Yes	Yes		10	9	9	10	9	6	3
0709000201	Scuppernon River	57	5	25:75	Yes	Yes		6	6	7	8	7	6	3
0709000202	Whitewater River	64	9	31:69		Yes	Yes	7	6	8	8	7	9	7
0709000203	Bark River	48	15	26:74		Yes		7	6	9	7	6	7	9
0709000204	Koshkonong Creek	70	10	32:68		Yes		6	6	9	9	9	9	9
0709000205	Headwaters Yahara River	76	14	13:87	Yes	Yes		1	1	7	1	1	9	10
0709000206	Lake Mendota-Yahara River	53	24	3:97	Yes	Yes	Yes	1	1	8	1	1	10	10
0709000207	Lake Monona-Yahara River	27	43	7:93	Yes	Yes		5	4	4	3	3	4	10
0709000208	Badfish Creek	78	9	90:9	Yes	Yes	Yes	6	6	10	10	10	10	8
0709000209	Lake Kegonsa-Yahara River	66	12	18:82	Yes	Yes		6	5	9	9	9	9	10
0709000210	Lake Koshkonong-Rock River	61	9	49:51	Yes	Yes	Yes	8	8	9	8	8	9	10
0709000211	Blackhawk Creek	75	16	0:100	Yes	Yes		6	7	4	9	9	10	10
0709000212	Bass Creek	86	5	8:92	Yes	Yes	Yes	7	7	5	10	10	10	10
0709000213	Marsh Creek-Rock River	56	16	82:18	Yes	Yes		5	5	2	8	9	9	10
0709000214	Turtle Creek	76	11	21:79	Yes	Yes	Yes	7	7	4	10	10	10	10
0709000215	City of Beloit-Lower Rock River	55	21	69:31	Yes	Yes		10	10	5	10	10	9	1
0709000301	Mineral Point Branch	84	6	2:98	Yes			10	10	8	10	10	10	1
0709000302	Headwaters Pecatonica River	86	4	0:100	Yes			10	10	7	10	10	10	5
0709000303	Ames Branch-Pecatonica River	88	5	1:99				10	10	9	10	10	10	3
0709000304	Dodge Branch	75	7	2:98	Yes	Yes		9	10	8	9	9	9	5
0709000305	Blue Mounds Branch	69	5	0:100	Yes	Yes	Yes	10	10	6	9	9	9	7
0709000306	Ridgeway Br-East Br Pecatonica R	71	6	14:86	Yes			10	10	8	9	9	8	2
0709000307	Yellowstone River	75	4	0:100				10	10	8	9	9	8	8
0709000308	East Branch Pecatonica River	77	4	1:99	Yes	Yes		10	10	9	10	10	9	4
0709000309	Spafford Creek-Pecatonica River	86	5	1:99	Yes	Yes		10	10	8	10	10	10	7
0709000310	Honey Creek-Pecatonica River	79	7	3:96	Yes	Yes		10	10	6	10	10	10	3
0709000311	Richland Creek	89	7	0:100	Yes	Yes	Yes	na	na	na	na	na	na	na
0709000312	Waddams Creek-Pecatonica River	na	na	na				8	8	5	9	10	10	6
0709000315	Raccoon Creek	74	5	0:100			Yes	na	na	na	na	na	na	na
0709000316	Pecatonica River	na	na	na				na	na	na	na	na	na	na
0709000401	West Branch Sugar River	70	6	2:98			Yes	9	9	7	9	9	10	8
0709000402	Headwaters Sugar River	66	17	19:81	Yes	Yes		9	9	6	9	9	9	10
0709000403	Allen Creek	82	7	12:88		Yes	Yes	7	8	6	10	10	10	7
0709000404	Little Sugar River	75	5	2:98	Yes	Yes	Yes	9	8	8	10	10	10	7
0709000405	Story Creek-Sugar River	76	5	2:98	Yes	Yes	Yes	7	8	6	10	10	10	6
0709000406	Sylvester Creek-Sugar River	82	5	3:97	Yes	Yes	Yes	9	9	8	10	10	9	6
0709000407	Taylor Creek-Sugar River	76	5	4:96	Yes	Yes	Yes	8	8	9	9	10	9	9
0709000408	Sugar Creek	86	2	0:100				na	na	na	na	na	na	1
0709000501	Keith Creek-Rock River	na	na	na				na	na	na	na	na	na	na
0709000603	Piscasaw Creek	85	9	67:33				6	7	8	6	7	10	8
0712000401	Headwaters Des Plaines River	60	15	5:95				9	8	8	10	9	8	1
0712000402	Mill Creek	63	12	17:82				9	8	6	6	5	8	1
0712000403	Bull Creek-Des Plaines River	na	na	na				na	na	na	na	na	na	na
0712000601	Pewaukee River-Fox River	27	45	68:32	Yes			5	3	7	3	2	6	6
0712000602	Mukwonago River	45	17	0:100		Yes		4	3	1	4	3	5	9
0712000603	Wind Lake Drainage	55	17	15:85	Yes			6	4	7	5	4	9	2

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								Incr	Dec'd	Incr	Dec'd	
0712000604	Sugar Creek	68	10	0:100	Yes	Yes		4	3	8	5	6
0712000605	Honey Creek	67	8	6:94	Yes	Yes		3	2	7	4	6
0712000606	White River	47	18	17:83	Yes		Yes	4	3	5	3	6
0712000607	Eagle Creek-Fox Creek	47	19	42:58			Yes	4	3	6	3	6
0712000608	North Branch Nippersink Creek	64	13	12:88				6	4	8	4	3
0712000609	Nippersink Creek	94	4	0:100				9	5	9	4	1
0712000610	Squaw Creek-Fox River	51	14	45:55				4	3	9	5	2

Appendix 2. Wisconsin Watershed Rotation Water Quality Monitoring Data (Pour Point data)



Total Phosphorus (median May-October in mg/L) (minimum of 4 sample results)			
HUC 10	Watershed	Location Description	conc. (mg/l)
Lake Superior Basin			
0401030104	Middle Nemadji River	NEMADJI RIVER - 50YDS ABOVE FINN RD BRIDGE	0.045
0401030206	White River	WHITE RIVER DOWNSTREAM OF STH 13	0.044
0401030203	Headwaters Bad River	BAD RIVER	0.041
0401030105	Lower Nemadji	NEMADJI RIVER - AT CTH C, NEAR SOUTH SUPERIOR WI	0.040
0401030204	Marengo River	MARENGO RIVER - AT GOVERNMENT ROAD, NEAR HIGHBRIDGE	0.038
0401030110	Bayfield Peninsula SE -- Frontal LS	SIOUX RIVER - OFF OF FRIENDLY VALLEY RD	0.036
0401030108	Iron River -- Frontal Lake Superior	IRON RIVER - 100 METERS UPSTREAM OF ORIENTA FALLS	0.036
0401030106	Amnicon River -- Frontal Lake Superior	AMNICON RIVER - 464 METERS DOWNSTREAM OF HWY 13 STATION #1	0.035
0401030109	Bayfield Peninsula NW -- Frontal LS	BARK RIVER - HWY 13, STATION #1	0.035
0401030111	Fish Creek -- Front. Chequamegon Bay	NORTH FISH CREEK AT OLD US 2, NEAR MOQUAH WI	0.035
0401030201	Montreal River	MONTREAL RIVER - HWY 122	0.034
0401030107	Bois Brule River	BOIS BRULE RIVER WINNEBOUJOU CANOE LAUNCH	0.032
0401030202	Tyler Forks	TYLER FORKS, AT FOOTBRIDGE ABOVE BROWNSTONE FALLS	0.030
0401030206	White River	WHITE RIVER - AT SUTHERLAND BRIDGE TO PRIMITIVE CAMPSITE	0.027
0402010103	Presque Isle	CRAB CREEK - AT CTH B	0.021
0401030205	Potato River	POTATO RIVER - 10 METERS UPSTREAM OF POTATO RIVER RD	0.016
Lake Michgian Basin			
0403010103	North Branch Manitowoc River	MANITOWOC RIVER - NORTH BRANCH RIVER VIEW RD	0.522
0403010112	Black, Sauk and Sucker Creeks	BLACK RIVER AT INDIAN MOUND RD	0.382
0403010104	South Branch Manitowoc River	SOUTH BRANCH MANITOWOC RIVER AT LEMKE ROAD	0.354
0403020302	Fond du Lac River	Fond du Lac River -- comparable data set	0.296
0403020402	Plum Creek -- Fox River	PLUM CREEK - COUNTY HWY ZZ BRIDGE WRIGHTSTOWN	0.288
0403020404	Fox River -- Frontal Green Bay	APPLE CREEK - ROSIN RD	0.286
0403020208	Shioc River	SHIOC RIVER AT STH 187 BRIDGE	0.255
0403020403	East River	BOWER CREEK (1) 50M UPSTREAM OF HWY GV	0.255
0403020112	Lake Butte des Mortes	SPRING BROOK - AT HWY 21	0.252
0403010106	Manitowoc River -- Fr Lake Michigan	MUD CREEK - HILLTOP ROAD	0.243
0403020214	Bear Creek -- Wolf River	BEAR CREEK AT STH 76 IN STEPHENS	0.241
0403020402	Plum Creek -- Fox River (2)	UNNAMED TRIB TO LAKE WINNEBAGO AT OLD HIGHWAY RD	0.236
0403020104	Upper Grand River	Grand River upstream of Markešan -- comparable data set	0.234
0403010107	Sevenmile & Silver Crs. Fr. Lake Mich	multiple streams -- Sevenmile -- Silver watershed	0.230
0403020221	Lake Poygan	ARROWHEAD RIVER - OAKRIDGE (LAKEVIEW) ROAD	0.222
0403010112	Black, Sauk and Sucker Creeks (2)	SAUK CREEK - SOUTH WISCONSIN STREET	0.213
0403020213	Bear Creek -- Embarrass River	BEAR CREEK	0.211
0403010302	Suamico and Little Suamico	LITTLE SUAMICO RIVER AT CTH J	0.201
0403020402	Plum Creek -- Fox River	FOX RIVER - AT KIMBERLY BOAT LANDING	0.196
0403020303	East Shore Lake Winnebago	DE NEVEU CREEK AT 4TH ST (CTH T)	0.182
0403010110	Onion River	ONION RIVER - UPSTREAM OF BROADWAY STREET	0.175

0403020402	Plum Creek -- Fox River (2)	KANKAPOT CREEK - CTH Z DODGE STREET	0.174
0403010108	Pigeon River	PIGEON RIVER - COUNTY HIGHWAY LS	0.173
0403020213	Black, Sauk and Sucker Creeks (2)	SUCKER CREEK - SUCKER BROOK LANE	0.171
0403020221	Lake Poygan (2)	RAT RIVER - SOUTH ROAD	0.162
0403010109	Mullet River	MULLET RIVER - AT CTY HWY M	0.149
0403020110	Rush Creek	WAUKAU CREEK - AT CTH E	0.146
0404000202	Root River Canal	Root River Canal -- extrapolated from Root River	0.142
0404000203	Root River	100M UPSTREAM OF MEMORIAL DRIVE BRIDGE	0.142
0404000306	Milwaukee River -- Frontal Lake Mich	Milwaukee River -- comparable data set	0.132
0403010111	Sheboygan River -- Fr. Lake Michigan	SHEBOYGAN RIVER - 14TH ST	0.127
0403020211	Pigeon River (Waupaca)	PIGEON RIVER - AT KLEMP ROAD	0.126
0403020401	Duck Creek - Fr. Green Bay	DUCK CREEK - VELD AVE BRIDGE HOWARD	0.124
0403010204	Red River and L. Sturgeon Bay	SUGAR CREEK - SUGAR CREEK COUNTY PARK	0.122
0404000204	Pike River -- Frontal Lake Michigan	PIKE RIVER - AT HWY E	0.121
0404000301	North Branch Milwaukee River	MILWAUKEE RIVER NORTH BRANCH @ HWY M	0.115
0403020402	Plum Creek -- Fox River (2)	NEENAH SLOUGH	0.112
0403010404	Little River	LITTLE RIVER - AT STH 22	0.108
0403010301	Pensaukee River -- Fr. Green Bay	PENSAUKEE RIVER - AT CTH S BRIDGE	0.103
0403020105	Lower Grand River	GRAND RIVER - AT CTH H, NEAR KINGSTON WI	0.102
0403010202	Ahnapee River -- Stony Creek	AHNAPEE RIVER - CTH X NR FORESTVILLE	0.100
0403020402	Plum Creek -- Fox River (2)	MUD CREEK AT CTH BB	0.100
0403020103	Montello River	KLAWITTER CREEK #1	0.097
0403020301	West Shore L. Winnebago	LAKE WINNEBAGO TRIB - CTH A	0.093
0403020101	Swan Lake -- Fox River	Fox R upstr of Swan Lake -- extrapolated from Belle Fountain Creek	0.091
0403010506	Lower Peshtigo River	TROUT CREEK - TOWNLINE ROAD	0.090
0404000304	Menomonee River	LITTLE MENOMONEE 2 (AT DONGES BAY RD)	0.090
0403020106	Buffalo & Puckaway Lakes -- Fox R	FOX RIVER - GRAND RIVER LOCKS ACCESS	0.089
0403020206	Shawano Lake	PICKEREL CREEK @ JAMES ST	0.087
0403010505	Little Peshtigo River	LITTLE PESHTIGO RIVER - AT CTH W	0.083
0403020219	Partridge L - Wolf River	WOLF RIVER - SHAW LANDING ACCESS	0.080
0404000305	Kinnickinnic River	KINNICKINNIC RIVER - AT 11TH STREET, AT MILWAUKEE WI	0.078
0403010105	Branch River	BRANCH RIVER AT N UNION RD	0.076
0404000303	Cedar Creek	CEDAR CREEK - CEDAR CREEK AND LAKEFIELD ROAD	0.075
0404000302	East & West Br Milwaukee	MILWAUKEE RIVER - AT CTH A (BI)	0.075
0403010101	East Twin River - Fr. Lake Michigan	EAST TWIN RIVER - STEINERS CORNERS	0.073
0403020213	Bear Creek-- Embarrass (2)	EMBARRASS R @ SPUR RD	0.073
0403020212	North Br. & Mainstem Embarrass	EMBARRASS RIVER - AT CTH M	0.073
0403020210	Middle and South Br. Embarrass R	MIDDLE BRANCH EMBARRASS RIVER - AT WEASEL DAM ROAD	0.070
0403010102	West Twin River	WEST TWIN RIVER - HWY Q	0.070
0403020219	Partridge L - Wolf River (2)	WOLF RIVER - GILLS LANDING ACCESS	0.069
0403020212	North Br & Mainstem Embarrass R (2)	EMBARRASS RIVER - WEST MAIN STREET (CTH C)	0.068
0403020209	School Section Cr -- Wolf River	ROSE BROOK - ROSE BROOK ROAD	0.066
0403020218	Waupaca River	WAUPACA RIVER AT WEYAUWEGA DAM	0.064
0404000201	Oak Creek -- Fr Lake Michigan	OAK CREEK - AT OAK CR PARKWAY 3M (BI)	0.061
0403010202	Ahnapee River -- Stony Creek (2)	STONY CREEK - AT ROSEWOOD RD	0.059
0403020220	Willow Creek -- Pine Rivers	WILLOW CREEK AT CTH D	0.059
0403010203	Kewaunee River	KEWAUNEE RIVER - AT CTH F, NEAR KEWAUNEE WI	0.054

0403020109	Big Green Lake	DAKIN CREEK - MAUG ROAD	0.054
0403020215	Flume Creek -- Little Wolf River	Flume Creek -- extrapolated from South Branch Little Wolf River	0.051
0403020216	South Branch Little Wolf	S BRANCH LITTLE WOLF R 20FT UP STREAM FROM BRIDGE SUNNYVIEW RD	0.051
0403010405	Oconto River	SPLINTER CREEK AT STILES ROAD	0.050
0403020111	City of Berlin -- Fox River	Barnes Creek -- comparable data set	0.049
0403020219	Partridge Lake -- Wolf River (2)	WALLA WALLA CREEK - MARSH ROAD BRIDGE	0.048
0403020102	Neenah Creek	HEENAH CREEK-HWY 23	0.042
0403020207	Legend Lake -- Wolf River	WOLF RIVER - WOLF RIVER CANOE LAUNCH 1	0.042
0403020217	Blake Creek -- Little Wolf River	WHITCOMB CREEK UPSTREAM FROM CTY RD 00	0.037
0403020108	White River	WHITE RIVER AT 22 AVE SE OF NESHKORO	0.035
0403010402	North Branch Oconto River	OCONTO RIVER - STH 32 BRIDGE-SURING	0.035
0403010809	Menominee River	MENOMINEE RIVER - UPPER SCOTT FLOWAGE - ACCESS AT STH 180	0.033
0403010807	Squaw Creek -- Menominee R	MENOMINEE RIVER - AT CTH Z	0.030
0403020201	Swamp Creek	WOLF RIVER - UPSTREAM FROM CTH B BRIDGE	0.029
0403010402	North Branch Oconto River (2)	NORTH BRANCH OCONTO RIVER	0.029
0403010501	Rat River	RAT RIVER AT HARPER RD	0.028
0403010502	Upper Peshtigo River	Peshtigo River -- extrapolated from Rat River	0.028
0403010403	Peshtigo Brook	Peshtigo Brook -- extrapolated from Oconto and N. Br. Oconto	0.027
0403020203	Evergreen River -- Wolf River	Evergreen River -- extrapolated from Red River	0.026
0403020204	West Branch Wolf River	West Branch Wolf River -- extrapolated from Red River	0.026
0403020205	Red River	RED RIVER - AT MAPLE AVENUE	0.026
0403020107	Mecan River	CHAFFEE CREEK - CTH Y IBI STATION 1	0.025
0403020202	Lily River	LILY RIVER APPROX 50M ABOVE HWY 55 BRIDGE AT LARGE BOULDER ON R	0.024
0403010504	Middle Peshtigo River	PESHTIGO RIVER AT HWY W	0.023
0403010506	Lower Peshtigo River (2)	PESHTIGO RIVER AT CTH E	0.023
0403010603	Iron River -- Brule River	Brule River headwaters -- extrapolated from Brule River	0.022
0403010605	Brule River	BRULE RIVER AT US 2/14	0.022
0403010801	Popple River	WOODS CREEK - HWY 101	0.019
0403010401	South Branch Oconto River	SOUTH BRANCH OCONTO RIVER @ STH 32	0.018
0403010802	Pine River	PINE RIVER - AT STH 101	0.018
0403010504	Middle Peshtigo River (2)	THUNDER RIVER AT COUNTY PARK FOOT BRIDGE JUST ABOVE VETERANS FA	0.016
0403010806	Pike River	PIKE RIVER AT PIKE R ROAD	0.016
0403010503	Middle Inlet Creek -- Lake Noquebay	MIDDLE INLET CREEK - AT CTH X	0.015
0403010809	Menominee River	WAUSAUKEE RIVER AT JAMROS ROAD	0.014
0403010805	Pemebonwon River	NORTH BRANCH PEMEBONWON RIVER - AT CTH R	0.012
0403010201	Upper Door Peninsula	HIBBARDS CREEK AT CTH A	0.010
Mississippi River Basin			
0709000213	Marsh Creek -- Rock River	ROCK RIVER - AT USH 14 BRIDGE	0.452
0707000217	Little Eau Pleine River	LITTLE EAU PLAINE RIVER AT RANGELINE ROAD BRIDGE	0.399
0704000502	Upper Trempealeau	extrapolated from Elk Creek	0.385
0704000503	Elk Creek (Trempealeau)	ELK CREEK - SWEDE VALLEY RD, TN RD NENE SEC 14 T22 R9W	0.385
0709000110	Lower Crawfish River	CRAWFISH RIVER - AT STH 18	0.371
0709000104	Sinissippi Lake	ROCK RIVER AT STH 60 DOWNSTREAM FROM LAKE SINISSIPPI	0.339
0707000215	Upper Big Eau Pleine River	BIG EAU PLEINE R - AT STH 97 BRIDGE	0.332

0705000604	Otter Creek (nr. Eau Claire)	OTTER CREEK @ MOROVITZ HOLLOW RD	0.323
0704000501	Pigeon Creek (Trempealeau)	PIGEON CREEK AT STH 53	0.307
0709000111	Middle Rock River	ROCK RIVER - AT STH 106	0.304
0704000304	Waumandee Creek	WAUMANDEE CREEK AT WAUMANDEE CREEK ROAD	0.297
0704000306	City of Winona -- Mississippi River	extrapolated from Waumandee	0.297
0707000311	Upper Yellow (Central Wis.)	YELLOW RIVER AT STH 13/73	0.296
0709000109	Beaver Dam River	BEAVER DAM RIVER AT CTH J BRIDGE	0.294
0709000208	Badfish Creek	BADFISH CREEK - AT CASEY ROAD	0.294
0704000302	Lower Buffalo River	BUFFALO RIVER - AT STH 37	0.289
0709000103	Rubicon River	RUBICON RIVER - AT CTH EE	0.283
0709000101	East Branch Rock River	ROCK RIVER, EAST BRANCH - AT CTH TW BRG	0.278
0705000507	Lowes Creek (nr. Eau Claire)	LOWES CREEK - SILVER SPRINGS DR	0.275
0705000506	Elk Creek	ELK CREEK AT 960TH STREET / CRESCENT AVE	0.271
0705000508	Muddy Creek -- Chippewa River	Extrapolated from Elk Creek	0.271
0705000509	Muddy Creek -- Chippewa River	Extrapolated from Elk Creek	0.271
0704000702	Popple River (Black River)	POPPLE RIVER AT STATE HWY 73 (FH STA 1)	0.269
0704000712	Lower Black River	FLEMING CREEK	0.267
0704000601	Halfway Creek -- Mississippi River	extrapolated from Fleming Creek	0.267
0709000111	Lower Koshkonong (on Rock)	05427085 - ROCK RIVER @ STH 12 BRIDGE, FORT ATKINSON	0.264
0704000301	Upper Buffalo River	BUFFALO RIVER - SEGERSTROM RD	0.260
0709000102	Upper Rock River	ROCK RIVER - AT STH 33 IN HORICON	0.253
0709000109	Beaver Dam River (2)	ROCK RIVER - AT CTH B	0.252
0709000203	Bark River	BARK RIVER - CTH N, FORT ATKINSON	0.248
0704000504	Middle Trempealeau River	TURTON CREEK AT OAK STREET	0.240
0704000711	Beaver Creek & Lake Marinuka	BEAVER CREEK AT HWY 53	0.237
0709000109	Calamus Creek (2)	CALAMUS CREEK AT HWY S (CTH T)	0.225
0707000509	Bear Creek (Lower Wisconsin)	BEAR CREEK AT CTH JJ	0.220
0709000108	Mauneshia River	MAUNESHA RIVER UPSTREAM STH 19	0.219
0705000504	Duncan Creek	DUNCAN CREEK - SPRING STREET (CHIPPEWA FALLS)	0.215
0705000505	Trout Creek -- Chippewa River	Extrapolate from Duncan Creek	0.215
0709000309	Spafford Cr -- Pecatonica R	PECATONICA RIVER - STH 176 S WAYNE	0.213
0704000704	Cawley and Rock Creeks (Black)	ROCK CREEK - ROCK CREEK STATION	0.210
0707000403	Narrows Cr. & Baraboo River	BARABOO RIVER - SHAW STREET IN BARABOO	0.208
0709000210	Lake Koshkonong -- Rock River	Extrapolated from Koshkonong Creek	0.202
0709000407	Lower Sugar River	SUGAR RIVER - AT NELSON ROAD	0.202
0704000712	Big and Douglas Creeks (2)	BIG CREEK	0.202
0709000204	Lower Koskonong	KOSHKONONG CREEK AT STH 106	0.202
0707000302	Mill Creek (Central Wisc)	MILL CREEK - AT CTH PP BRIDGE	0.199
0707000303	City of Stevens Point -- Wisconsin R	Extrapolated from Mill Creek	0.199
0704000709	O'Neill and Cunningham Creeks	CUNNINGHAM CREEK - AT STH 95/73 BRIDGE	0.197
0709000303	Middle Pecatonica	PECATONICA RIVER AT WALNUT ROAD	0.195
0709000209	Yahara R and Lake Kegonsa	YAHARA RIVER - AT STH 59	0.194
0704000505	Lower Trempealeau	TAMARACK CREEK AT CTH G	0.187
0707000401	Seymour Creek and Upper Baraboo	BARABOO RIVER - AT CTH FF IN WONEWOC	0.186
0705000207	Holcombe Flowage	MUD CREEK AT CTH D	0.186
0707000603	Middle Kickapoo	KICKAPOO RIVER - BANKER PARK IN VIOLA	0.186
0709000308	Lower East Branch Pecatonica	EAST BRANCH PECATONICA RIVER AT CISSERVILLE ROAD	0.182

0709000111	Johnson Creek	JOHNSON CREEK - AT CTH B IN JOHNSON CREEK	0.179
0704000709	O'Neill and Cunningham Creeks(2)	BLACK RIVER - AT STH 95 BRIDGE	0.174
0706000303	Lower Grant River	GRANT RIVER - HWY 133	0.173
0709000307	Yellowstone River	YELLOWSTONE RIVER - AT OLD Q ROAD	0.170
0704000604	Lower La Crosse River	BOSTWICK CREEK STATION 1 - CTH "B" BRIDGE	0.168
0712000607	Middle Fox River (SE)	FOX RIVER @ CTH I	0.167
0709000304	Dodge Branch	Extrapolated from East Branch Pecatonica	0.166
0709000306	Upper East Br. Pecatonica	PECATONICA RIVER, E BRANCH - FOOT BRIDGE OFF WATER ST BLANCHARDV	0.166
0707000402	Crossman & Little Baraboo	BARABOO RIVER - AT STH 23, BRIDGE IN REEDSBURG	0.162
0707000404	Lower Baraboo	BARABOO RIVER AT COUNTY HIGHWAY U	0.161
0712000401	Headwaters Des Plaines River	DES PLAINES @ MB	0.161
0709000406	Sylvester Creek -- Sugar River	Sugar River at Ten Eyck Rd	0.161
0709000202	Whitewater Creek	WHITEWATER CREEK - FREMONT ROAD IN COLD SPRING	0.160
0707000504	Honey Creek	HONEY CREEK AT STATE HIGHWAY 60	0.159
0705000402	North Fork Jump River	From USGS nutrient study	0.158
0705000704	Lake Chetek	CHETEK RIVER AT 4 1/2 AVENUE CROSSING	0.156
0709000206	Six Mile and Pheasant Br Creeks	SIX MILE CREEK AT COUNTY HWY M	0.156
0705000707	Pine and Red Cedar	1 LOWER PINE CR - CTH V	0.155
0709000301	Mineral Point and Sudan Branches	MINERAL POINT BRANCH - CTH O (BI)	0.154
0709000202	Whitewater Creek (2)	WHITEWATER CREEK - FREMONT ROAD IN COLD SPRING	0.153
0709000310	Honey and Richland Creeks	HONEY CREEK - 50M UPSTREAM OF CTH P BRIDGE	0.152
0707000216	Lower Big Eau Pleine River	FENWOOD CREEK AT FAIRVIEW ROAD	0.151
0712000401	Headwaters Des Plaines River	DES PLAINES RIVER	0.151
0709000404	Little Sugar River	LITTLE SUGAR RIVER AT TIN CAN ROAD	0.149
0706000304	Little Platte River	LITTLE PLATTE RIVER - OAK RD (BI)	0.146
0707000514	Blue River	BLUE RIVER AT STATE HIGHWAY 133	0.145
0712000608	North Branch Nippersink Creek	From USGS nutrient study	0.145
0712000609	Nippersink Creek	Extrapolated from North Branch Nippersink Creek	0.145
0709000603	Piscasaw Creek	Extrapolated from North Branch Nippersink Creek	0.015
0707000211	Springbrook Creek	SPRING BROOK - BEFORE EAU CLAIRE R AT NOLAN RD	0.145
0707000207	Black Creek (Cent. Wis)	BLACK CREEK AT CTH H	0.143
0706000101	Coon Creek	COON CREEK - NEAR MOUTH	0.141
0705000706	Hay River	HAY RIVER @ CTH V	0.139
0707000511	Pine Creek	PINE RIVER AT STH 60	0.139
0705000702	Yellow River (Red Cedar)	YELLOW RIVER - CTY O	0.138
0705000207	Lower Flambeau River (2)	MEADOW BROOK AT STH 27	0.135
0709000401	West Br Sugar River	W BR OF SUGAR R - 100YDS UPSTR FROM BRIDGE OFF MONTROSE RD	0.135
0706000302	Middle Grant River	GRANT RIVER - AT PIGEON RIVER ROAD	0.133
0709000302	Upper West Branch Pecatonica R	PECATONICA RIVER, WEST BRANCH - OAK PARK RD	0.133
0709000107	Headwaters Crawfish River	Crawfish River in Columbus at Lundington	0.132
0707000315	Upper Lemonweir River	Extrapolated from Little Lemonweir	0.129
0707000503	Roxbury Creek	ROXBURY CREEK AT STH 78	0.129
0707000316	Little Lemonweir River	LITTLE LEMONWEIR AT MCEWEN RD BRIDGE	0.129
0709000201	Scuppernong River	SCUPPERNONG RIVER - AT STH 106	0.127
0712000603	Wind Lake Drainage	Older comparable study	0.126
0704000603	Little La Crosse River	LITTLE LA CROSSE RIVER AT ICEBOX RD (PREVIOUSLY NAMED 7TH AVE)	0.124
0705000603	Black and Hay Creeks	HAY CREEK - HAY CREEK 1, CTH NL	0.123

0707000513	Mill and Indian Creeks	MILL CREEK - AT STATE HIGHWAY 60	0.122
0704000701	Black and L. Black Rivers	BLACK RIVER - DIVISION DRIVE	0.121
0705000502	Yellow River	YELLOW RIVER AT 350TH ST	0.121
0707000507	Trout and Mill Creeks	MILL CREEK AT CTH C	0.120
0709000206	Lake Mendota -- Yahara (2)	PHEASANT BRANCH - CTH M EAST BRIDGE	0.116
0712000601	Pewaukee - Fox River	FOX RIVER AT RIVER RD (BI SUR)	0.116
0705000707	Lower Pine - Red Cedar (2)	RED CEDAR RIVER IBI - STH 64	0.115
0707000601	Headwaters Kickapoo	KICKAPOO RIVER - STH 33 IN ONTARIO	0.115
0707000310	Hemlock Creek	HEMLOCK CREEK AT NECEDAH ROAD	0.113
0707000502	Prairie du Sac Dam -- Wisconsin R	From USGS nutrient study	0.113
0705000710	Lake Menomin -- Red Cedar	WILSON CREEK AT 390TH ST BRIDGE	0.113
0709000205	Headwaters Yahara	YAHARA RIVER - AT STH 113, AT MADISON WI	0.113
0705000510	Eau Galle River	EAU GALLE RIVER - AT CTH P	0.112
0705000511	Plum Creek	1-PLUM CREEK CTH N	0.112
0703000510	Willow River	WILLOW RIVER - 160TH AVE	0.111
0704000709	Lake Arbutus - Black River (2)	BLACK RIVER - BELOW POWER HOUSE-HATFIELD DAM	0.111
0705000512	Bear Creek	BEAR CREEK AT HIGHWAY 85	0.111
0709000311	Richland Creek	RICHLAND CREEK - CTH P BRIDGE UPSTREAM 660M TO SHUEYVILLE RD BRID	0.111
0705000503	Lake Wissota	YELLOW RIVER - AT CTH XX	0.109
0706000305	Platte River	PLATTE RIVER - BANFIELD BRIDGE ACCESS	0.109
0712000606	White River	WHITE RIVER	0.109
0709000309	Honey Creek- Pecatonica River (2)	SKINNER CREEK - CHEESE COUNTRY RECREATION TRAIL IN BROWNTOWN	0.108
0712000402	Mill Creek	Extrapolated from stream in 0712000401	0.108
0707000511	Pine River (2)	PINE RIVER @ STH 14 RICHLAND CENTER	0.106
0706000103	Bad Axe	BAD AXE RIVER - NEAR MOUTH @ WILLENBERG ROAD BRIDGE	0.106
0707000317	Lower Lemonweir River	LOWER LEMONWEIR RIVER AT HWY HH BRIDGE	0.104
0706000301	Upper Grant	GRANT RIVER - UNIVERSITY FARM RD	0.103
0709000305	Blue Mounds Branch (2)	GORDON CREEK AT COUNTY HIGHWAY H	0.103
0707000313	Mead Marsh -- Yellow River	YELLOW RIVER ABOVE NECEDAH TREATMENT PLANT OUTFALL	0.103
0709000402	Headwaters Sugar River	Older comparable study	0.103
0705000501	Fisher River -- Chippewa River	FISHER RIVER - 240TH AVE	0.102
0705000109	Holcombe Flowage	Extrapolated from Fisher River	0.102
0709000106	Ashippun River	ASHIPPUN RIVER AT SKI SLIDE ROAD	0.102
0712000610	Squaw Creek -- Fox river	FOX RIVER AT WILMOT WI	0.101
0709000403	Allen Creek	Extrapolated from Story Creek -- Sugar River	0.100
0709000405	Story Creek -- Sugar River	SUGAR RIVER - AT CTH EE	0.100
0707000510	Willow Creek	From TMDL study	0.100
0705000605	Eau Claire River	EAU CLAIRE RIVER ADJACENT TO CTH QQ - COUNTY LAND	0.099
0707000210	Scotch Creek -- Rib River	LOWER RIB RIVER (UW-23)	0.099
0707000505	Black Earth Creek	BLACK EARTH CREEK - AT MORRILL ROAD	0.098
0707000319	Dell Cr -- Wisconsin River	DELL CREEK AT STATE HIGHWAY 23	0.098
0706000307	Sny Magill Cr -- Mississippi R	MCCARTNEY BRANCH - IRISH RIDGE RD	0.097
0707000605	Kickapoo River	PINE CREEK STATION 1-1975-NE 1/4 NW 1/4 SEC 18	0.095
0703000507	Beaver Brook -- Apple River	BEAVER BROOK - DOWNSTREAM OF 85TH STREET APPROX 10 METERS	0.094
0704000710	Robinson Creek	ROBINSON CREEK AT ROBINSON ROAD	0.094
0705000303	South Fork Flambeau R	SKINNER CREEK	0.093
0707000515	Knapp Creek	KNAPP CREEK @ WINDING WAY DR	0.092

0707000604	Tainter Creek -- Kickapoo R	HALLS CREEK-CTY HWY E DOWNSTREAM	0.091
0709000212	Bass Creek	BASS CREEK - CTH D, AFTON	0.091
0709000315	Raccoon Creek	Extrapolated from Bass Creek	0.091
0709000215	City of Beloit -- Lower Rock River	Extrapolated from Bass Creek	0.091
0705000108	Deer Tail Creek	DEER TAIL CREEK - AT BROKEN ARROW RD	0.090
0707000202	Copper River	COPPER RIVER - AT CTH E	0.090
0712000604	Sugar Creek	SUGAR CREEK UPSTREAM OF POTTER ROAD	0.090
0712000605	Honey Creek	Extrapolated from Sugar Creek	0.090
0703000509	Big Marine L, -- St. Croix R	OSCEOLA CREEK APPROX 20 METERS UPSTREAM OF HWY 35	0.090
0703000108	North Fork Clam River	NORTH FORK CLAM RIVER - AT MALONE ROAD CROSSING	0.089
0707000508	Otter Creek	OTTER CREEK AT HWY C	0.088
0707000501	Duck Cr -- Wisconsin R	DUCK CREEK AT DUCK CREEK ROAD	0.087
0707000314	Beaver Creek	BEAVER CREEK UPSTREAM OF STH 21	0.085
0707000506	Blue Mounds Creek	Comparable study	0.083
0707000112	Spirit River	SPIRIT RIVER-BELOW CONFLUENCE WITH SQUAW CREEK	0.083
0705000601	North Fork Eau Claire R	EAU CLAIRE RIVER - NORTH FORK, NE1/4 OF SE1/4 SEC10	0.081
0704000703	Trappers -- Pine -- Black R	BLACK RIVER	0.080
0705000401	South Fork Jump River	SOUTH FORK JUMP RIVER ALONG CTH I	0.079
0707000204	Alexander L -- Wisconsin River	DEVIL CREEK - SCOTT ROAD	0.078
0709000214	Turtle Creek	TURTLE CREEK - COLLEY ROAD IN БЕЛОИТ	0.078
0705000705	South Fork Hay River	SOUTH FORK HAY RIVER - S FORK HAY RIVER 1, CTH F	0.078
0704000602	Upper LaCrosse River	LACROSSE RIVER	0.077
0712000601	Pewaukee River -- Fox River (2)	PEWAUNEE RIVER UPSTREAM OF STH 164 AT STEINHAFEL'S ENTRANCE	0.077
0709000207	Lake Monona -- Yahara River	YAHARA RIVER - AT USH 51	0.077
0706000107	Rush Creek -- Mississippi River	RUSH CREEK ST 1 - BRIDGE ON RUSH CREEK ROAD	0.073
0706000110	Bloody Run -- Mississippi River	Extrapolated from Rush Creek	0.073
0707000218	L. Dubay -- Wisconsin River	LITTLE EAU CLAIRE RIVER - AT CTH X BRIDGE	0.073
0707000218	L. Dubay -- Wisconsin River	JOHNSON CREEK AT CTH C	0.073
0709000105	Oconomowoc River	OCONOMOWOC RIVER	0.072
0707000602	West Fork Kickapoo River	KICKAPOO RIVER, WEST FORK - SE 1/4 OF NW 1/4 SEC 33	0.071
0705000404	Lower Jump River	JUMP RIVER AT HIGHWAY 73	0.070
0703000109	Clam River	CLAM RIVER @ LYNCH BRIDGE ROAD	0.069
0706000503	Galena River	FEVER (GALENA) RIVER - AT ENSCHE & BUNCOMBE ROADS	0.067
0705000403	Main Creek	MAIN CREEK AT BROKEN ARROW ROAD	0.065
0705000703	Brill River-- Red Cedar River	RED CEDAR RIVER ACCESS - 19TH ST (N45 26' 41.8" W091 45' 54.2")	0.065
0707000516	Big Green River	From USGS reference study	0.065
0707000307	Petenwell Lake	MOCCASIN CREEK AT STH 54, STATION 1	0.065
0707000518	Wisconsin River	MILLVILLE CREEK AT CTH C	0.064
0703000104	Shell Lake -- Yellow River	YELLOW RIVER - DOWNSTREAM OF YELLOW RIVER ROAD APPROX 10 METER	0.063
0705000107	Soft Maple -- Chippewa River	DEVILS CREEK - LOW SITE AT HWY 40 BRIDGE	0.063
0703000508	Balsam Branch -- Apple River	BALSAM BRANCH AT 105TH AVE - UPSTREAM OF LAKE WAPPOGASSETT	0.062
0704000705	Wedges Creek	WEDGES CREEK AT MIDDLE RD	0.062
0707000208	Wood Creek -- Rib River	BIG RIB RIVER AT CTH A	0.062
0709000211	Blackhawk Creek	SPRING BROOK - AT MAIN STREET, JANESVILLE	0.061
0703000501	Wood River	WOOD RIVER AT WEST RIVER ROAD CROSSING (1MI ABOVE ST CROIX R)	0.059
0703000508	Balsam Branch -- Apple River (2)	APPLE RIVER @ CHURCH ROAD	0.059
0707000206	Trappe River	TRAPPE RIVER AT SHADY LANE, STATION 1	0.057

0707000214	Eau Claire Flowage -- Wisconsin River	Extrapolated from Trappe River	0.057
0703000507	Beaver Brook -- Apple River (2)	APPLE RIVER - APPLE RIVER COUNTY PARK (N45 23' 15.5" W092 22' 05.2")	0.057
0707000318	Petenwell Lake	WHITE CREEK AT CTH Z	0.057
0707000313	Mead Marsh -- Yellow River (2)	LITTLE YELLOW RIVER	0.056
0707000203	Prairie River	From USGS nutrient study	0.055
0707000212	Black Brook -- Eau Claire River	EAU CLAIRE RIVER AT W BEAR LAKE ROAD	0.055
0703000112	Chases Brook -- St. Croix River	ST CROIX RIVER - NORWAY POINT LANDING	0.054
0705000102	East Fork Chippewa River	CHIPPEWA RIVER, EAST FORK - CTH B AB FLOWAGE	0.054
0705000404	Lower Jump River	JUMP RIVER	0.053
0705000602	South Fork Eau Claire River	EAU CLAIRE RIVER, SOUTH FORK - SOUTH FORK EAU CLAIRE RIVER	0.053
0704000706	East Fork Black River	BLACK RIVER, EAST FORK - E FORK RD	0.053
0707000108	Upper Tomahawk River	TOMAHAWK RIVER - ADJACENT TO CEDAR FALLS RD	0.052
0703000510	Willow River (2)	WILLOW RIVER - BELOW LITTLE FALLS	0.051
0707000113	L. Mohawksin -- Lake Alice -- Wis R	WISCONSIN RIVER - OFF CAMP 10 RD	0.050
0705000205	Upper Flambeau River	NORTH FORK FLAMBEAU RIVER BELOW CROWLEY DAM	0.049
0703000506	Wolf River -- St. Croix River	WOLF CREEK @ 275TH STREET	0.049
0707000517	City of Boscobel -- Wisconsin River	From USGS nutrient study	0.047
0705000205	Upper Flambeau River	SWAMP CREEK AT CTH F	0.047
0705000701	Red Cedar Lake	KNUTESON CREEK	0.047
0703000512	Lake St. Croix	Lake St. Croix -- extrapolated from Kinnickinnic	0.046
0706000105	Mormon Creek - Mississippi River	Mormon Creek -- from USGS nutrient study	0.046
0704000605	Pine Creek -- Mississippi River	extrapolated from Mormon Creek	0.046
0707000213	Big Sandy Creek -- Eau Claire River	EAU CLAIRE RIVER - AT CAMP PHILLIPS RD	0.046
0703000511	Kinnickinnic River	KINNICKINNIC RIVER - CTH F BRIDGE	0.046
0707000104	Rainbow Flowage -- Mud Creek	WISCONSIN RIVER - TAILWATER BELOW OTTER RAPIDS DAM	0.045
0707000113	L. Mohawksin -- Lake Alice -- Wis R	NOISY CREEK - AT WOODFORD RD	0.045
0707000604	Tainter Creek -- Kickapoo R (2)	TAINTER CREEK	0.045
0707000107	Pelican River	PELICAN RIVER AT GERMOND RD	0.045
0704000101	Big River -- Mississippi River	Big River -- Mississippi River -- extrapolated from Trimble R	0.044
0705000106	Thornapple River	THORNAPPLE RIVER - CTH A NW LADYSMITH	0.044
0707000205	Pine River	From TMDL study	0.044
0704000103	Trimble River	TRIMBLE RIVER 1-50' US OF STH 35	0.044
0707000201	New Wood River	NEW WOOD RIVER - AT TESCH RD	0.043
0707000105	Gilmore Creek -- Big St. Germain R	GILMORE CREEK - AT CTH D	0.042
0705000301	Elk River	ELK RIVER	0.041
0705000107	Soft Maple -- Chippewa River	CHIPPEWA RIVER AT BOAT LANDING NEAR CTH H AND STH 40	0.040
0707000101	Deerskin River	DEERSKIN RIVER AT RANGELINE RD	0.040
0709000213	Marsh Creek -- Rock River	MARSH CREEK - CTH E	0.040
0703000105	Yellow Lake -- Yellow River	YELLOW RIVER DOWNSTREAM OF LOWEST HWY 35 CROSSING APPROX 20 M	0.040
0703000505	Trade River	TRADE RIVER APPROX 100 METERS DOWNSTREAM OF EVERGREEN AVENUE	0.040
0705000105	Brunet River -- Chippewa River	BIG WEIRGOR CREEK - DOWNSTREAM OF SHORT CUT ROAD	0.040
0707000103	Pioneer Creek -- Wisconsin R	WISCONSIN RIVER AT CTH G EAGLE RIVER	0.040
0704000707	Morrison Creek	MORRISON CREEK - AT HWY K	0.039
0707000309	Little Roche Cri Creek	LITTLE ROCHE A CREEK AT CTH J	0.038
0717000209	Little Rib River	LITTLE RIB, (NORTH OF) STEWART AVE, SITE 1	0.037
0705000204	Butternut Creek	BUTTERNUT CREEK	0.036
0707000109	Middle Tomahawk River	Tomahawk River at Prairie Rapids Road	0.036

0707000113	L. Mohawksin -- Lake Alice -- Wis R (3)	TOMAHAWK RIVER - AT PRAIRIE RAPIDS RD	0.036
0703000112	Goose Creek -- St. Croix	Goose Creek -- St. Croix -- extrapolated from 0703000102	0.035
0705000101	West Fork Chippewa River	WEST FORK CHIPPEWA RIVER ADJACENT TO COUNTY HIGHWAY S	0.035
0705000206	Middle Flambeau River	FLAMBEAU RIVER AT BOAT LANDING UPSTREAM OF STH 70	0.035
0705000302	Headwaters South Fork Flambeau R	SOUTH FORK FLAMBEAU RIVER	0.035
0703000102	Moose River - St Croix R	ST CROIX RIVER AT CCC BRIDGE	0.035
0707000218	Lake Dubay -- Wisconsin River	FOURMILE CREEK - AT CTH KK	0.034
0705000205	Upper Flambeau River	NORTH FORK FLAMBEAU RIVER AT HOLTS LANDING	0.034
0703000103	Upper Tamarack River	UPPER TAMARACK RIVER - CTH T BRIDGE	0.033
0703000106	Lower Tamarack River	Lower Tamarack -- extrapolated from 0703000103	0.033
0707000111	Somo River	SOMO RIVER - AT ZENITH TOWER RD	0.033
0705000302	Headwaters Flambeau River	FLAMBEAU RIVER - SOUTH FORK, AT STH 13 WAYSIDE SOUTH OF FIFIELD	0.032
0705000206	Middle Flambeau River	PINE CREEK AT COUNTY HWY EE	0.031
0703000203	Totagatic River	TOTAGATIC RIVER - THOMPSON BRIDGE ROAD CROSSING	0.030
0707000218	Lake Dubay -- Wisconsin River	BULL JUNIOR CREEK - AT OLD 51 BRIDGE	0.030
0707000305	Tenmile Creek	TENMILE CREEK - AT HWY 13	0.030
0705000203	Headwaters Flambeau River	FLAMBEAU RIVER	0.029
0704000105	Rush River	4-RUSH RIVER - 385TH ST	0.029
0704000107	Lake Pepin	Lake Pepin -- extrapolated from Rush River	0.029
0707000301	Plover River	PLOVER RIVER (UW-12)	0.029
0707000308	Big Roche A Cri Creek	BIG ROCHE A CRI CREEK @ 20TH AVE, SITE 1	0.028
0707000512	City of Spring Green -- Wisconsin R	From USGS nutrient study	0.028
0703000101	Upper St. Croix -- Eau Claire Rivers	ST CROIX RIVER - AT OLD HWY 53	0.027
0707000105	Gilmore Creek -- Big St. Germain R (2)	ST GERMAIN RIVER - AT STH 70	0.027
0707000110	Lower Tomahawk River	LITTLE RICE CREEK AT CTH N	0.027
0707000102	Eagle River	EAGLE RIVER AT STH 70	0.027
0707000306	Fourteenmile Creek	FOURTEENMILE CREEK AT CTH Z BRIDGE	0.026
0703000202	Trego Lake -- Namekagon River	NAMEKAGON RIVER - DOWNSTREAM OF CTH K BRIDGE APPROX 40 METERS	0.025
0707000113	L. Mohawksin - L. Alice- Wis R (3)	CRESCENT CREEK - 370 METERS DS FROM FIRE TOWER RD	0.025
0703000201	Upper Namakagon River	NAMEKAGON RIVER - AT HOSPITAL ROAD	0.024
0705000103	Lake Chippewa	HAY CREEK - AT MOOSE LAKE ROAD	0.024
0707000312	Cranberry Creek	CRANBERRY CREEK AT 8TH STREET	0.024
0703000202	Trego Lake -- Namekagon River (2)	NAMEKAGON RIVER	0.023
0705000202	Bear River	BEAR RIVER - UPSTREAM BRIDGE RD	0.022
0712000602	Mukwanago River	MUKWONAGO RIVER - AT CTH I 2M (BI SUR)	0.022
0704000708	Halls Creek	Used USGS nutrient study data from Vismal Creek	0.021
0705000104	Couderay River	COUDERAY RIVER	0.021
0707000106	Rhineland Flowage	PINE LAKE CREEK AT FOREST LN	0.021
0703000204	Namekagon River	NAMEKAGON RIVER DOWNSTREAM OF NAMEKAGON TRAIL APPROX 30 ME	0.020
0705000201	Manitowish River	TROUT RIVER - BELOW WILD RICE LAKE	0.018
0707000304	Fourmile Creek	Fourmile Creek at Buena Vista at Griffith Ave	0.015
0705000201	Manitowish River	MANITOWISH RIVER - AT US 51	0.015
0707000204	Alexander L -- Wisconsin River (2)	FOURMILE CREEK AT GRIFFITH AVENUE	0.015

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location_Description	(mg/L)
Lake Superior Basin			
0401030104	Middle Nemadji River	NEMADJI RIVER - 50YDS ABOVE FINN RD BRIDGE	0.00
0401030105	St. Louis and Lower Nemadji River	NEMADJI RIVER - AT CTH C, NEAR SOUTH SUPERIOR WI	0.53
0401030107	Bois Brule River	BOISE BRULE RIVER - WINNEBOUJOU CANOE LAUNCH	0.00
0401030108	Iron River	IRON RIVER, ABOUT 100M UPSTREAM OF ORIENTA FALLS	0.00
0401030109	Bayfield Peninsula NW -- Frontal Lake Superior	BARK RIVER - 15M UPSTREAM, HWY 13, STATION #1	0.03
0401030110	Bayfield Peninsula SE -- Frontal Lake Superior	SIOUX RIVER - OFF OF FRIENDLY VALLEY RD	0.02
0401030111	Fish Creek - Frontal Chequamegon Bay	NORTH FISH CREEK AT OLD US 2, NEAR MOQUAH WI	0.05
0401030201	Montreal River	MONTREAL RIVER HWY 122	0.09
0401030202	Tyler Forks	TYLER FORKS, AT FOOTBRIDGE ABOVE BROWNSTONE FALLS	0.04
0401030203	Headwaters Bad River	BAD RIVER - EAST TYLER RD, BRIDGE ON NE SIDE OF MELLE	0.75
0401030204	Marengo River	MARENGO RIVER-AT GOVERNMENT ROAD, NEAR HIGHBRIDGE	0.06
0401030205	Potato River	POTATO RIVER, 10M UPSTREAM OF POTATO RIVER RD	0.00
0401030206	White River	WHITE RIVER AT SUTHERLAND BRIDGE TO PRIMITIVE CAMP	0.00
0401030206	White River	WHITE RIVER DOWNSTREAM OF STH 13	0.00
0402010103	Presque Isle River	CRAB CREEK - AT CTH W	0.45
Lake Michigan Basin			
0403020109	Big Green Lake	DAKIN CREEK MAUG ROAD	14.11
0403010204	Red River and Sturgeon Bay	SUGAR CREEK-SUGAR CREEK COUNTY PARK-150FT UPSTREAM	5.80
0403020302	Fond du Lac River	extrapolated from De Neve Creek	4.88
0403020303	East Shore Lake Winnebago	DE NEVEU CREEK AT 4TH ST (CTH T)	4.88
0403020101	Swan Lake -- Fox River	extrapolated from Belle Fountain Creek	4.53
0403020105	Lower Grand River	BELLE FOUNTAIN CREEK AT CTH B (BI)	4.53
0403020104	Upper Grand River	extrapolate from Belle Fountain Creek	4.35
0403010108	Pigeon River	PIGEON RIVER - COUNTY HIGHWAY LS	3.76
0403010105	Branch River	BRANCH RIVER AT N UNION RD	3.72
0403010109	Mullet River	MULLET RIVER - AT CTY HWY M	3.68
0403010104	South Branch Manitowoc River	SOUTH BRANCH MANITOWOC RIVER AT LEMKE ROAD	3.65
0403010106	Manitowoc River -- Frontal Lake Michigan	MUD CREEK - HILLTOP ROAD	3.43
0403020209	School Section Creek -- Wolf River	ROSE BROOK-ROSE BROOK ROAD	3.43
0403010201	Upper Door Peninsula	HIBBARDS CREEK AT CTH A	3.42
0403020214	Bear Creek -- Little Wolf River	BEAR CREEK AT STH 76 IN STEPHENS	3.28
0403010103	North Branch Manitowoc River	MANITOWOC RIVER - NORTH BRANCH RIVER VIEW RD	2.97
0404000301	North Branch Milwaukee River	MILWAUKEE RIVER NORTH BRANCH @ HWY M	2.90
0404000304	Menomonee River	LITTLE MENOMONEE 2 AT DONGES BAY RD	2.71
0403010101	East Twin River	EAST TWIN RIVER-EAST TWIN RIVER-STEINERS CORNERS	2.70
0403010107	Sevenmile & Silver Crs -- Fr Lake Michigan	comparable study	2.66
0403020216	South Branch Little Wolf River	S BRANCH LITTLE WOLF R, 20FT UPSTREAM FROM BRIDGE	2.65
0403020219	Partridge Lake -- Wolf River	WALLA WALLA CREEK AT MARSH ROAD	2.61
0403020110	Rush Creek	WAUKAU CREEK - AT CTH E	2.59
0403020105	Lower Grand River	GRAND RIVER - AT CTH H, NEAR KINGSTON WI	2.54
0403020107	Mecan River	CHAFFEE CREEK CTH Y IBI STATION 1	2.54
0403010203	Kewaunee River	KEWAUNEE RIVER - AT CTH F, NEAR KEWAUNEE WI	2.53
0403020208	Shioc River	SHIOC RIVER AT STH 187 BRIDGE	2.45
0403020221	Lake Poygan	RAT RIVER - SOUTH ROAD	2.43
0403020402	Plum Creek -- Fox River (2)	FOX RIVER - AT KIMBERLY BOAT LANDING	2.40
0404000302	East and West Branches Milwaukee River	MILWAUKEE RIVER - AT CTH A (BI)	2.33
0403010202	Ahnapee River and Stony Creek	AHNAPEE RIVER - CTH X NR FORESTVILLE	2.32
0403010102	West Twin River	WEST TWIN RIVER-HWY Q	2.28

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location_Description	(mg/L)
0403010112	Black R & Sauk and Sucker Creeks -- Fr LM	SUCKER CREEK - SUCKER BROOK LANE	2.23
0403020212	North Br & Mainstem Embarrass R (2)	EMBARRASS RIVER, WEST MAIN STREET (CTH C)	2.21
0404000204	Pike River	PIKE RIVER - PIKE RIVER3 AT HWY E	2.20
0403020108	White River	WHITE RIVER AT 2ND AVE SE OF NESHKORO	2.20
0403020402	Plum Creek -- Fox River	PLUM CREEK - COUNTY HWY ZZ BRIDGE, WRIGHTSTOWN	2.19
0403020212	North Br & Mainstem Embarrass R (2)	BEAR CREEK	2.17
0403020103	Montello River	KLAWITTER CREEK #1 - BRIDGE ON CTH B	2.09
0403020112	Lake Butte Des Motes	SPRING BROOK - AT HWY 21	2.07
0403010506	Lower Peshigo River	TROUT CREEK-TOWNLINE ROAD	2.04
0403020215	Flume Creek -- Little Wolf River	extrapolated from Waupaca River	2.01
0403020218	Waupaca River	WAUPACA RIVER AT WEYAUWEGA DAM	2.01
0403020219	Partridge Lake -- Wolf River (2)	WOLF RIVER - GILLS LANDING ACCESS	2.01
0403010302	Suamico and Little Suamico Rivers	LITTLE SUAMICO RIVER AT CTH J	1.98
0403020404	Fox River -- Fr Green Bay	APPLE CREEK - ROSIN RD	1.92
0403020217	Blake Creek -- Little Wolf River	WHITCOMB CREEK UPSTREAM FROM CTY RD OO	1.80
0404000306	Milwaukee River - Frontal Lake Michigan	USGS nutrient study	1.71
0403020402	Plum Creek -- Fox River	NEENAH SLOUGH	1.69
0403010202	Ahanapee and Stony Creek (2)	STONY CREEK - AT ROSEWOOD RD	1.67
0404000303	Cedar Creek	CEDAR CREEK - CEDAR CREEK AND LAKEFIELD ROAD	1.66
0403020213	Bear Creek Embarrass River	EMBARRASS RIVER - AT SPUR RD	1.62
0403020102	Neenah Creek	NEENAH CREEK-HWY 23	1.59
0403020403	East River	BOWER CREEK (1) 50M UPSTREAM OF HWY GV	1.57
0403020212	North Br & Mainstem Embarrass R	EMBARRASS RIVER AT STONEY HILL ROAD	1.55
0403020402	Plum Creek -- Fox River (2)	KANKAPOT CREEK - CTH Z DODGE STREET, 100FT UPSTREAM	1.47
0403010505	Little Peshtigo River	LITTLE PESHTIGO RIVER - AT CTH W	1.41
0403010111	Sheboygan River -- Frontal Lake Michigan	SHEBOYGAN RIVER 14TH ST	1.41
0403010112	Black R & Sauk & Sucker Creeks -- Fr LM (2)	BLACK RIVER AT INDIAN MOUND RD	1.40
0403020303	East Shore Lake Winnebago	UNNAMED TRIB TO LAKE WINNEBAGO AT OLD HIGHWAY RD	1.40
0403020106	Buffalo and Puckaway Lakes	FOX RIVER 30FT DOWNSTREAM FROM HISTORICAL MARKER	1.38
0403020111	City of Berlin -- Fox River	extrapolated from Buffalo -- Puckaway	1.38
0403010403	Peshigo Brook	extrapolated from Oconto River	1.36
0403010405	Oconto River	SPLINTER CREEK AT STILES ROAD	1.36
0403020402	Plum Creek -- Fox River (2)	FOX RIVER - WRIGHTSTOWN LAUNCH	1.35
0403010112	Black R & Sauk & Sucker Creeks -- Fr LM (2)	SAUK CREEK - SOUTH WISCONSIN STREET	1.33
0403020210	Middle & South Br Embarrass R	MIDDLE BRANCH EMBARRASS RIVER AT WEASEL DAM ROAD	1.31
0403020219	Partridge Lake -- Wolf River (2)	WOLF RIVER - SHAW LANDING ACCESS	1.31
0403020220	Willow Creek -- Pine River	WILLOW CREEK AT CTH D	1.24
0403020211	Pigeon River	PIGEON RIVER - AT KLEMP ROAD	1.22
0403010404	Little River	LITTLE RIVER - AT STH 22	1.16
0403020402	Plum Creek	MUD CREEK AT CTH BB	1.09
0403010301	Pensaukee River	PENSAUKEE RIVER - CTH S BRIDGE	1.09
0403010110	Onion River	ONION RIVER-UPSTREAM OF BROADWAY STREET	1.06
0403020207	Lake Legend -- Wolf River	WOLF RIVER - WOLF RIVER CANOE LAUNCH 1	1.02
0403020401	Duck Creek	DUCK CREEK - VELD AVE BRIDGE HOWARD	0.99
0403020106	Buffalo and Puckaway Lakes (2)	FOX RIVER - GRAND RIVER LOCKS ACCESS	0.97
0404000305	Kinnickinnic River	KINNICKINNIC RIVER AT 11TH STREET AT MILWAUKEE WI	0.97
0403020205	Red River	RED RIVER AT MAPLE AVENUE	0.96
0403020203	Evergreen River -- Wolf River	extrapolate from Red River	0.96
0403020204	West Branch Wolf River	extrapolate from Red River	0.96
0404000201	Oak Creek - Fr. Lake Michigan	OAK CREEK AT OAK CR PARKWAY 3M (BI)	0.93
0403010402	North Branch Oconto River	OCONTO RIVER - STH 32 BRIDGE-SURING	0.91
0403020221	Lake Poygan	ARROWHEAD RIVER (0743-B)	0.86

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location Description	(mg/L)
0403010504	Middle Peshtigo River	PESHTIGO RIVER AT HWY W	0.63
0403010506	Lower Peshtigo River	PESHTIGO RIVER AT CTH E	0.62
0403020206	Shawano Lake	PICKEREL CREEK AT JAMES ST	0.62
0403010801	Popple River	WOODS CREEK - HWY 101	0.62
0404000202	Root River Canal	extrapolated from Root River	0.61
0404000203	Root River	100M UPSTREAM OF MEMORIAL DRIVE BRIDGE	0.61
0403010809	Menominee River	MENOMINEE RIVER UPPER SCOTT FLOWAGE ACCESS AT ST	0.56
0403010402	North Branch Oconto River	NORTH BRANCH OCONTO RIVER	0.56
0403010603	Iron River -- Brule River	extrapolated from Brule River	0.55
0403010605	Brule River	BRULE RIVER AT US 2/14	0.55
0403020201	Swamp Creek	WOLF RIVER - UPSTREAM FROM CTH B BRIDGE	0.55
0403010503	Middle Inlet -- Lake Noquebay	MIDDLE INLET CREEK - AT CTH X	0.54
0403010807	Pemebonwon and Middle Menominee Rivers	MENOMINEE RIVER AT CTH Z	0.53
0403010802	Pine River	PINE RIVER - ELECTROFISHING STATION 2, BEGINS AT HWY	0.52
0403010805	Pemebonwon River	NORTH BRANCH PEMOBONWON RIVER AT CTH R	0.51
0403010401	South Branch Oconto River	SOUTH BRANCH OCONTO RIVER @ STH 32	0.46
0403010809	Menominee River	WAUSAUKEE RIVER AT JAMROS ROAD	0.44
0403020202	Lily River	LILY RIVER LILY RIVER APROX 50M ABOVE HWY 55 BRIDGE	0.44
0403010806	Pike River	PIKE RIVER AT PIKE R. ROAD	0.42
0403010504	Middle Peshtigo River	THUNDER RIVER AT COUNTY PARK FOOT BRIDGE JUST ABC	0.39
0403010501	Rat River	RAT RIVER AT HARPER RD	0.38
0403010502	Upper Peshtigo River	extrapolated from Rat River	0.38
0403020301	West Shore Lake Winnebago	LAKE WINNEBAGO TRIB - CTH A	0.37
0404000205	Waukegan River -- Frontal Lake Michigan		na
0403010601	North Branch Paint River		na
Mississippi River Basin			
0709000211	Blackhawk Creek	SPRING BROOK - MAIN STREET IN JANESVILLE	12.85
0709000208	Badfish Creek	BADFISH CREEK - CASEY ROAD	12.39
0709000310	Honey Creek-Pecatonica River	HONEY CREEK - 50M UPSTREAM OF CTH P BRIDGE	10.08
0709000311	Richland Creek	RICHLAND CREEK - CTH P BRIDGE UPSTREAM 660M TO SHU	9.84
0709000603	Piscasaw Creek	extrapolated from N. Br Nippersink	7.78
0712000608	North Branch Nippersink Creek	From USGS Nutrient Study -- W Br Nippersink	7.78
0712000609	Nippersink Creek	Extrapolated form N. Br Nippersink	7.78
0709000303	Ames Branch-Pecatonica River	extrapolated from Pecatonica at Walnut Rd	7.39
0709000309	Spafford Creek-Pecatonica River	PECATONICA RIVER AT WALNUT ROAD	7.39
0706000303	Lower Grant River	GRANT RIVER - HWY 133	7.33
0706000304	Little Platte River	LITTLE PLATTE RIVER - OAK RD (BI)	7.00
0709000309	Spafford Creek-Pecatonica River	PECATONICA RIVER - STH 176 SOUTH WAYNE	6.94
0709000212	Bass Creek	BASS CREEK - CTH D, AFTON	6.73
0709000315	Raccoon Creek	extrapolated from Bass Creek	6.73
0706000301	Upper Grant River	GRANT RIVER - UNIVERSITY FARM RD	6.43
0709000403	Allen Creek	extrapolated from Sugar River at CTH EE	6.10
0709000405	Story Creek-Sugar River	SUGAR RIVER - AT CTH EE	6.10
0709000206	Lake Mendota-Yahara River	PHEASANT BRANCH CTH M EAST BRIDGE	6.02
0706000502	Sinsinawa River-Mississippi River	extrapolated from Galena River	5.98
0706000503	Galena River	GALENA RIVER - AT BEEBE ROAD	5.98
0706000505	South Fork Apple River-Apple River	extrapolated from Galena River	5.98
0707000304	Fourmile Creek	FOURMILE CREEK AT GRIFFITH AVENUE	5.91
0709000401	West Branch Sugar River	WEST BRANCH SUGAR RIVER AT CTH PB	5.90
0709000404	Little Sugar River	LITTLE SUGAR RIVER AT TIN CAN ROAD	5.76

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location Description	(mg/L)
0709000302	Headwaters Pecatonica River	PECATONICA RIVER, WEST BRANCH - OAK PARK ROAD	5.58
0709000214	Turtle Creek	TURTLE CREEK - COLLEY ROAD IN BELOIT	5.52
0703000511	Kinnickinnic River	KINNICKINNIC RIVER - CTH F BRIDGE	5.47
0703000512	Lake Saint Croix	extrapolated from Kinnickinnic River	5.47
0709000213	Marsh Creek-Rock River	MARSH CREEK - CTH E	5.42
0709000211	Blackhawk Creek	SPRING BROOK - MAIN STREET IN JANESVILLE	12.85
0709000208	Badfish Creek	BADFISH CREEK - CASEY ROAD	12.39
0709000310	Honey and Richland Creeks	HONEY CREEK - 50M UPSTREAM OF CTH P BRIDGE	10.08
0709000311	Honey and Richland Creeks	RICHLAND CREEK - CTH P BRIDGE UPSTREAM 660M TO SHU	9.84
0709000603	Piscasaw Creek	extrapolated from N. Br Nippersink	7.78
0712000608	North Branch Nippersink Creek	From USGS Nutrient Study -- W Br Nippersink	7.78
0712000609	Nippersink Creek	Extrapolated form N. Br Nippersink	7.78
0709000303	Ames Branch -- Pecatonica River	extrapolated from Pecatonica at Walnut Rd	7.39
0709000309	Lower Pecatonica River	PECATONICA RIVER AT WALNUT ROAD	7.39
0706000303	Lower Grant River	GRANT RIVER - HWY 133	7.33
0706000304	Little Platte River	LITTLE PLATTE RIVER - OAK RD (BI)	7.00
0709000309	Lower Pecatonica River (2)	PECATONICA RIVER - STH 176 SOUTH WAYNE	6.94
0709000212	Bass Creek	BASS CREEK - CTH D, AFTON	6.73
0709000315	Raccoon Creek	extrapolated from Bass Creek	6.73
0706000301	Upper Grant River	GRANT RIVER - UNIVERSITY FARM RD	6.43
0709000403	Allen Creek and Middle Sugar River	extrapolated from Sugar River at CTH EE	6.10
0709000405	Allen Creek and Middle Sugar River	SUGAR RIVER - AT CTH EE	6.10
0709000206	Six Mile and Pheasant Branch Creeks	PHEASANT BRANCH CTH M EAST BRIDGE	6.02
0706000502	Sinsinawa River -- Mississippi River	extrapolated from Galena River	5.98
0706000503	Galena River	GALENA RIVER - AT BEEBE ROAD	5.98
0706000505	South Fork Apple River -- Apple River	extrapolated from Galena River	5.98
0707000304	Fourmile and Fivemile Creek	FOURMILE CREEK AT GRIFFITH AVENUE	5.91
0709000401	West Branch Sugar River - Mt. Vernon Cre	WEST BRANCH SUGAR RIVER AT CTH PB	5.90
0709000404	Little Sugar River	LITTLE SUGAR RIVER AT TIN CAN ROAD	5.76
0709000302	Upper West Branch Pecatonica River	PECATONICA RIVER, WEST BRANCH - OAK PARK ROAD	5.58
0709000214	Turtle Creek	TURTLE CREEK - COLLEY ROAD IN BELOIT	5.52
0703000511	Kinnickinnic River	KINNICKINNIC RIVER - CTH F BRIDGE	5.47
0703000512	Lake St. Croix	extrapolated from Kinnickinnic River	5.47
0709000213	Marsh Creek	MARSH CREEK - CTH E	5.42
0709000215	City of Beloit-Lower Rock River	Extrapolated from Marsh Creek	5.42
0706000302	Middle Grant River	GRANT RIVER - PIGEON RIVER RD	5.35
0709000402	Headwaters Sugar River	SUGAR RIVER - AT STH 69, BELLEVILLE	5.33
0709000210	Lake Koshkonong-Rock River	extrapolated from Koshkonong Creek	5.31
0709000204	Koshkonong Creek	KOSHKONONG CREEK AT STH 106	5.31
0707000510	Willow Creek	From USGS Nutrient Study -- Willow Cr	5.27
0709000204	Koshkonong Creek	KOSHKONONG CREEK AT CTH O	5.07
0709000406	Sylvester Creek-Sugar River	Sugar Creek at Ten Eyck Road	4.93
0706000305	Platte River	PLATTE RIVER - BANFIELD BRIDGE ACCESS	4.91
0709000301	Mineral Point Branch	MINERAL POINT BRANCH CTH O (BI)	4.86
0709000205	Headwaters Yahara River	YAHARA RIVER AT STH 113 AT MADISON WI	4.82
0709000107	Headwaters Crawfish River	CRAWFISH RIVER - IN COLUMBUS-LUDINGTON	4.78
0709000407	Taylor Creek-Sugar River	SUGAR RIVER - AT NELSON ROAD	4.71
0709000209	Lake Kegonsa-Yahara River	YAHARA RIVER - AT STH 59, NEAR FULTON WI	4.70
0709000308	East Branch Pecatonica River	EAST BRANCH PECATONICA RIVER AT CISSERVILLE ROAD	4.62
0709000206	Lake Mendota-Yahara River	SIX MILE CREEK AT COUNTY HWY M	4.59
0707000514	Blue River	BLUE RIVER AT STATE HIGHWAY 133	4.42
0712000603	Wind Lake Drainage	extrapolated from Eagle & Fox Creeks	4.40

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location_Description	(mg/L)
0712000607	Eagle Creek-Fox Creek	FOX RIVER @ CTY HWY I	4.40
0709000213	Marsh Creek-Rock River	ROCK RIVER - AT USH 14 BRIDGE	4.33
0709000305	Blue Mounds Branch	GORDON CREEK AT COUNTY HIGHWAY H	4.30
0707000211	Spring Brook	SPRING BROOK - BEFORE EAU CLAIRE R AT NOLAN RD	4.26
0709000202	Whitewater River	WHITEWATER CREEK - FREMONT ROAD IN COLD SPRING	4.13
0705000707	Lower Pine Creek-Red Cedar River	1 LOWER PINE CREEK - CTH V	4.11
0707000503	Otter Creek-Wisconsin River	ROXBURY CREEK AT STH 78	4.09
0712000401	Headwaters Des Plaines River	DES PLAINES AT MB	4.03
0712000402	Mill Creek	extrapolated from headwaters Des Plaines	4.03
0705000512	Bear Creek-Chippewa River	BEAR CREEK AT HIGHWAY 85	4.03
0709000310	Honey Creek-Pecatonica River	SKINNER CREEK - CHEESE COUNTRY RECREATION TRAIL IN	3.95
0709000101	East Branch Rock River	ROCK RIVER, EAST BRANCH - AT CTH TW BRIDGE	3.91
0707000501	Duck Creek-Wisconsin River	DUCK CREEK AT DUCK CREEK ROAD	3.79
0709000104	Sinnissippi Lake-Rock River	ROCK RIVER AT STH 60 DOWNSTREAM FROM LAKE SINISSIP	3.78
0712000604	Sugar Creek	SUGAR CREEK UPSTREAM OF POTTER ROAD	3.69
0712000605	Honey Creek	extrapolated from Sugar Creek	3.69
0706000307	Sny Magill Creek-Mississippi River	MCCARTNEY BRANCH - IRISH RIDGE RD	3.64
0709000304	Dodge Branch	extrapolated from 0709000306	3.62
0709000306	Ridgeway Br-East Br Pecatonica R	PECATONICA RIVER, E BRANCH-FOOTBRIDGE OFF WATER S	3.62
0703000510	Willow River	WILLOW RIVER - 160TH AVE	3.43
0704000101	Big River-Mississippi River	extrapolated from Trimbelle River	3.40
0704000103	Trimbelle River	TRIMBELLE RIVER 1-50' US OF STH 35	3.40
0704000504	Middle Trempealeau River	TURTON CREEK AT OAK STREET	3.35
0709000108	Mauneshia River	MAUNESHA RIVER UPSTREAM STH 19	3.35
0709000106	Ashippun River-Rock River	ASHIPPUN RIVER AT SKI SLIDE ROAD	3.30
0707000504	Honey Creek	HONEY CREEK AT STATE HIGHWAY 60	3.10
0709000307	Yellowstone River	YELLOWSTONE RIVER AT OLD Q ROAD	3.10
0704000302	Elk Creek-Buffalo River	BUFFALO RIVER - AT STH 37	3.07
0704000105	Rush River	4-RUSH RIVER - 385TH ST	3.04
0705000506	Elk Creek	ELK CREEK AT 960TH STREET/CRESENT AVE	3.04
0705000508	Muddy Creek-Chippewa River	extraplated from Elk Creek	3.04
0705000509	Muddy Creek-Chippewa River	extrapolated from Elk Creek	3.04
0709000110	Crawfish River	CRAWFISH RIVER - STATE HIGHWAY 18	3.02
0707000502	Prairie du Sac Dam-Wisconsin River	From USGS Nutrient Study - Hinkson Cr	2.93
0707000308	Big Roche a Cri Creek	BIG ROCHE A CRI CREEK AT 20TH AVE SITE 1	2.92
0707000309	Little Roche a Cri Creek	Bingham Creek at 11th Avenue	2.89
0709000103	Rubicon River	RUBICON RIVER - CTH EE	2.88
0709000111	Johnson Creek-Rock River	ROCK RIVER - CTH B & US 94	2.83
0709000102	West Branch Rock River-Rock River	ROCK RIVER - AT STH 33 IN HORICON	2.83
0707000605	Kickapoo River	PINE CREEK STATION STARTS AT WALKER HOLLOW RD BRID	2.80
0703000510	Willow River	WILLOW RIVER - BELOW LITTLE FALLS DAM	2.80
0709000109	Beaver Dam River	BEAVER DAM RIVER AT CTH J BRIDGE	2.79
0704000601	Halfway Creek-Mississippi River	extrapolated from Fleming Creek	2.79
0704000712	Fleming Creek-Black River	FLEMING CREEK	2.79
0704000604	Lower La Crosse River	BOSTWICK CREEK STATION 1 - CTH B BRIDGE	2.78
0707000516	Big Green River	WISCONSIN RIVER - BIG GREEN RIVER ACCESS	2.77
0704000502	Upper Trempealeau River	extrapolated from Elk Creek	2.75
0704000503	Elk Creek	ELK CREEK - SWEDE VALLEY RD	2.75
0704000603	Middle La Crosse River	LITTLE LA CROSSE RIVER AT ICEBOX RD (PREVIOUSLY NAM	2.68
0703000509	Big Marine Lake-Saint Croix River	OSCEOLA CREEK ST STH 35	2.60
0707000505	Black Earth Creek	BLACK EARTH CREEK AT MORRILL ROAD	2.54
0705000511	Plum Creek	1-PLUM CREEK CTH N	2.54

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location Description	(mg/L)
0705000705	South Fork of the Hay River	SOUTH FORK HAY RIVER - S FORK HAY RIVER 1, CTH F	2.53
0709000203	Bark River	BARK RIVER CTH N FORT ATKINSON	2.52
0707000517	City of Boscobel-Wisconsin River	From USGS Nutrient Study -- Crooked Cr	2.51
0707000318	Petenwell Lake	WHITE CREEK AT CTH Z	2.51
0707000301	Plover River	PLOVER RIVER (JW-12)	2.48
0709000109	Beaver Dam River	CALAMUS CREEK AT HWY S (CTH T)	2.45
0705000702	Yellow River	YELLOW RIVER - CTY O	2.42
0704000708	Halls Creek	HALLS CREEK-CTY HWY E DOWNSTREAM	2.42
0704000301	Harvey Creek-Buffalo River	BUFFALO RIVER SEGERSTROM RD	2.40
0704000711	Beaver Creek	BEAVER CREEK AT HWY 53	2.34
0709000111	Johnson Creek-Rock River	JOHNSON CREEK AT CTH B IN JOHNSON CREEK	2.33
0712000401	Headwaters Des Plaines River	DES PLAINS RIVER	2.31
0704000712	Fleming Creek-Black River	BIG CREEK	2.31
0712000610	Squaw Creek-Fox River	FOX RIVER AT WILMOT WI	2.29
0707000508	Otter Creek	OTTER CREEK AT HWY C	2.26
0707000507	Trout Creek-Mill Creek	MILL CREEK AT CTH C	2.18
0707000319	Dell Creek-Wisconsin River	DELL CREEK AT STATE HIGHWAY 23	2.17
0712000601	Pewaukee River-Fox River	FOX RIVER AT RIVER RD (BI SUR)	2.12
0704000501	Pigeon Creek	PIGEON CREEK AT STH 53	<u>2.11</u>
0704000304	Waumandee Creek	WAUMANDEE CREEK AT WAUMANDEE CREEK ROAD	2.09
0704000306	City of Winona-Mississippi River	extrapolated from Waumandee	2.09
0707000518	Wisconsin River	MILLVILLE CREEK AT CTH C	<u>2.06</u>
0706000103	Bad Axe River	BAD AXE RIVER NEAR MOUTH AT WILLENBERG ROAD BRIDGE	2.03
0707000404	Devil's Lake-Baraboo River	BARABOO RIVER AT COUNTY HIGHWAY U	1.99
0705000710	Lake Menomin-Red Cedar River	WILSON CREEK AT 390TH ST BRIDGE	1.89
0707000207	Black Creek	BLACK CREEK AT CTH H	1.79
0709000201	Scuppernon River	SCUPPERNON RIVER - AT STH 106	1.77
0707000212	Black Brook-Eau Claire River	EAU CLAIRE RIVER AT W BEAR LAKE ROAD	1.76
0707000209	Little Rib River	LITTLE RIB, (NORTH OF) STEWART AVE, SITE 1	1.76
0707000602	West Fork Kickapoo River	KICKAPOO RIVER, WEST FORK - SE 1/4 OF NW 1/4 SEC 33	1.75
0705000507	Lowes Creek-Chippewa River	LOWES CREEK - SILVER SPRINGS DR	1.74
0707000509	Bear Creek	BEAR CREEK AT CTH JJ	1.72
0712000606	White River	WHITE RIVER	1.66
0707000501	Duck Creek-Wisconsin River	PINE RIVER AT STH 60	1.62
0706000101	Coon Creek	COON CREEK NEAR MOUTH	1.61
0707000217	Little Eau Pleine River	LITTLE EAU PLAINE RIVER AT RANGELINE ROAD BRIDGE	1.57
0705000707	Lower Pine Creek-Red Cedar River	RED CEDAR RIVER IBI - STH 64	1.55
0706000107	Rush Creek-Mississippi River	RUSH CREEK ST.1 - BRIDGE ON RUSH CREEK ROAD	<u>1.54</u>
0706000110	Bloody Run-Mississippi River	extrapolated from Rush Creek	<u>1.54</u>
0707000403	Narrows Creek-Baraboo River	BARABOO RIVER - AT SHAW STREET IN BARABOO	1.53
0707000601	Headwaters Kickapoo River	KICKAPOO RIVER STH 33 IN ONTARIO	1.52
0707000402	Little Baraboo River-Baraboo River	BARABOO RIVER AT STH 23 BRIDGE IN REEDSBURG	1.48
0705000207	Lower Flambeau River	MEADOW BROOK AT STH 27	1.47
0707000603	Bear Creek-Kickapoo River	KICKAPOO RIVER - BANKER PARK IN VIOLA	1.45
0704000605	Pine Creek-Mississippi River	extrapolated from Mormon Creek	1.42
0706000105	Mormon Creek-Mississippi River	from USGS nutrient study	1.42
0712000602	Mukwonago River	MUKWONAGO RIVER AT CTH I 2M (BI SUR)	1.41
0705000510	Eau Galle River	EAU GALLE RIVER @ CTH P	1.40
0705000507	Lowes Creek-Chippewa River	LOWER CREEK - SILVER SPRINGS DR	<u>1.40</u>
0707000315	Upper Lemonweir River	extrapolated from Little Lemonweir	1.39
0707000316	Middle Lemonweir River	LITTLE LEMONWEIR AT MCEWEN RD BRIDGE	1.39
0705000706	Hay River	HAY RIVER @ CTH V	1.38

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location Description	(mg/L)
0707000515	Knapp Creek	KNAPP CREEK AT WINDING WAY DR	1.35
0707000218	Lake Dubay-Wisconsin River	JOHNSON CREEK AT CTH C	1.34
0707000311	Rocky Creek-Yellow River	YELLOW RIVER AT STH 13/73	1.34
0707000210	Scotch Creek-Big Rib River	LOWER RIB RIVER (UW-23)	1.33
0704000701	Black-Little Black Rivers	BLACK RIVER - AT DIVISION DRIVE	1.30
0707000604	Tainter Creek-Kickapoo River	TAINTER CREEK	1.30
0712000601	Pewaukee River-Fox River	PEWAUNEE RIVER UPSTREAM OF STH 164 AT STEINHAFEL'S	1.27
0704000505	Lower Trempealeau River	TAMARACK CREEK AT CTH G	1.23
0705000605	Eau Claire River	EAU CLAIRE RIVER, ADJACENT TO CTH QQ - COUNTY LAND	1.21
0707000215	Dill Creek-Big Eau Pleine River	BIG EAU PLEINE RIVER AT STH 97	1.21
0703000507	Beaver Brook-Apple River	BEAVER BROOK - UPSTREAM OF 85TH STREET, APPROX 10	1.20
0707000513	Hoosier Hollow-Mill Creek	MILL CREEK - STATE HIGHWAY 60	1.20
0707000305	Tenmile Creek	TENMILE CREEK - AT HWY 13	1.19
0704000702	Popple River	POPPLE RIVER AT STATE HWY 73 (FH STA 1)	1.19
0704000709	Lake Arbutus-Black River	BLACK RIVER BELOW POWER HOUSE HATFIELD DAM	1.18
0709000207	Lake Monona-Yahara River	YAHARA RIVER AT USH 51	1.15
0707000506	Blue Mounds Creek	West Br Blue Mounds at Frame Road	1.15
0707000401	Headwaters of the Baraboo River	BARABOO RIVER - AT CTH FF IN WONEWOC	1.15
0705000205	Upper Flambeau River	SWAMP CREEK AT CTH F	1.14
0707000204	Alexander Lake-Wisconsin River	DEVIL CREEK - SCOTT ROAD	1.14
0705000502	Upper Yellow River	YELLOW RIVER AT 350TH ST	1.13
0707000512	City of Spring Green-Wisconsin River	From USGS Nutrient Study -- Lowery Cr	1.13
0705000507	Lowes Creek-Chippewa River	CHIPPEWA RIVER - SHORT ST EAU CLAIRE	1.12
0707000511	Pine River	PINE RIVER - AT STH 14 RICHLAND CENTER	1.12
0705000504	Duncan Creek	DUNCAN CREEK - SPRING STREET, CHIPPEWA FALLS	1.11
0705000505	Trout Creek-Chippewa River	extrapolated from Duncan Creek	1.11
0707000213	Big Sandy Creek-Eau Claire River	EAU CLAIRE RIVER - AT CAMP PHILLIPS RD	1.09
0707000317	Lower Lemonweir River	LOWER LEMONWEIR RIVER AT HWY HH BRIDGE	1.08
0707000205	Pine River	extrapolated from Trappe River	1.08
0707000206	Trappe River	TRAPPE RIVER AT SHADY LANE, STATION 1	1.08
0707000214	Eau Claire Flowage-Wisconsin River	extrapolated from Trappe River	1.08
0705000207	Lower Flambeau River	MUD CREEK AT CTH D	1.06
0704000709	Lake Arbutus-Black River	BLACK RIVER - AT STH 95 BRIDGE	1.05
0705000404	Lower Jump River	JUMP RIVER AT HIGHWAY 73	1.04
0704000704	Rock Creek-Black River	ROCK CREEK ROCK CREEK STATION	1.04
0707000218	Lake Dubay-Wisconsin River	BULL JUNIOR CREEK AT OLD 51 BRIDGE	1.02
0707000314	Beaver Creek	BEAVER CREEK UPSTREAM OF STH 21	1.02
0705000303	South Fork Flambeau River	SKINNER CREEK	1.01
0705000603	Hay Creek-Eau Claire River	HAY CREEK - HAY CREEK 1, CTH NL	1.00
0705000109	Holcolmba Flowage-Chippewa River	extrapolated from Fisher River	1.00
0705000501	Fisher River-Chippewa River	FISHER RIVER - 240TH AVE	1.00
0707000604	Tainter Creek-Kickapoo River	TAINTER CREEK @ WEST POINT ROAD	1.00
0705000601	North Fork Eau Claire River	EAU CLAIRE RIVER, NORTH FORK - NE 1/4 OF SE 1/4 SEC 10	0.99
0707000218	Lake Dubay-Wisconsin River	FOURMILE CREEK @ CTH KK	0.99
0705000604	Otter Creek	OTTER CREEK - STATION 1/SPOONER AVE	0.99
0703000506	Wolf Creek-Saint Croix River	WOLF CREEK @ 275TH STREET	0.99
0705000401	South Fork Jump River	SOUTH FORK JUMP RIVER ALONG CTH I	0.97
0704000709	Lake Arbutus-Black River	CUNNINGHAM CREEK AT STH 95/73 BRIDGE	0.96
0707000307	Petenwell Lake	MOCCASIN CREEK MOCASSIN CREEK AT STH 54 STATION 1	0.96
0707000218	Lake Dubay-Wisconsin River	LITTLE EAU CLAIRE RIVER - AT CTH X BRIDGE	0.94
0705000703	Brill River-Red Cedar River	RED CEDAR RIVER	0.94
0705000108	Deer Tail Creek	DEER TAIL CREEK @ BROKEN ARROW RD	0.92

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location_Description	(mg/L)
0704000706	East Fork of the Black River	BLACK RIVER, EAST FORK - E FORK ROAD	0.91
0703000112	Chases Brook-Saint Croix River	ST CROIX RIVER NORWAY POINT LANDING	0.91
0707000216	Lake Dubay-Big Eau Pleine River	FENWOOD CREEK AT FAIRVIEW ROAD	0.88
0707000202	Copper River	COPPER RIVER AT CTH E	0.86
0707000310	Hemlock Creek	HEMLOCK CREEK AT NECEDAH ROAD	0.84
0703000502	Goose Creek-Saint Croix River	extrapolated from Moose River	0.84
0703000102	Moose River-Saint Croix River	ST CROIX RIVER - AT CCC BRIDGE OR ST CROIX TRAIL	0.83
0704000710	Robinson Creek-Black River	ROBINSON CREEK AT ROBINSON ROAD	0.83
0709000105	Oconomowoc River	OCONOMOWOC RIVER	0.83
0705000403	Main Creek	MAIN CREEK AT BROKEN ARROW ROAD	0.83
0703000508	Balsam Branch-Apple River	APPLE RIVER AT CHURCH ROAD	0.82
0707000313	Mead Marsh-Yellow River	YELLOW RIVER ABOVE NECEDAH TREATMENT PLANT OUTFALL	0.82
0703000104	Shell Lake-Yellow River	YELLOW RIVER - UPSTREAM OF YELLOW RIVER ROAD, APPLETON	0.81
0705000302	Headwaters South Fork Flambeau River	SOUTH FORK FLAMBEAU RIVER	0.81
0703000507	Beaver Brook-Apple River	APPLE RIVER - APPLE RIVER COUNTY PARK 40 METERS DOWNSTREAM	0.79
0705000402	North Fork Jump River	JUMP RIVER	0.79
0705000301	Elk River	ELK RIVER	0.76
0705000302	Headwaters South Fork Flambeau River	FLAMBEAU RIVER, SOUTH FORK - AT STH 13 WAYSIDE, SOUTH	0.76
0705000106	Thornapple River	THORNAPPLE RIVER - CTH A NW LADYSMITH	0.73
0707000306	Fourteenmile Creek	FOURTEENMILE CREEK AT CTH Z BRIDGE	0.73
0704000705	Wedges Creek	WEDGES CREEK AT MIDDLE RD	0.72
0707000511	Pine River	PINE RIVER AT STH 14 RICHLAND CENTER	0.72
0704000707	Morrison Creek	MORRISON CREEK AT HWY K	0.70
0705000602	South Fork Eau Claire River	EAU CLAIRE RIVER, SOUTH FORK EAU CLAIRE RIVER	0.68
0704000703	Trappers-Pine Creeks-Black River	BLACK RIVER	0.67
0705000107	Soft Maple Creek-Chippewa River	DEVILS CREEK - LOW SITE AT HWY 40 BRIDGE	0.66
0704000602	Upper La Crosse River	LACROSSE RIVER @ FINCH AVE	0.66
0705000105	Brunet River-Chippewa River	BIG WEIRGOR CREEK - DOWNSTREAM OF SHORT CUT ROAD	0.65
0707000208	Wood Creek-Big Rib River	BIG RIB RIVER AT CTH A	0.65
0707000108	Upper Tomahawk River	TOMAHAWK RIVER, ADJACENT TO CEDAR FALLS RD	0.63
0707000201	New Wood River	NEW WOOD RIVER AT TESCH RD	0.63
0707000111	Somo River	SOMO RIVER - AT ZENITH TOWER RD, DOWNSTREAM OF BRIDGE	0.62
0707000105	Gillmore Creek-Big St. Germain River	GILMORE CREEK - UPSTREAM FROM CTH-D (UPSTREAM OF BRIDGE)	0.61
0707000203	Prairie River	from USGS Nutrient Study	0.60
0705000206	Middle Flambeau River	FLAMBEAU RIVER AT BOAT LANDING UPSTREAM OF STH 70	0.59
0707000104	Rainbow Flow-Mud Creek-Wisconsin R	WISCONSIN RIVER - TAILWATER BELOW OTTER RAPIDS DAM	0.59
0705000202	Bear River	BEAR RIVER - UPSTREAM BRIDGE RD	0.58
0707000113	Lake Mohawksin-Lake Alice-Wisconsin R	WISCONSIN RIVER OFF CAMP 10 RD	0.57
0707000106	Rhineland Flowage-Upper Wisconsin R	PINE LAKE CREEK AT FOREST LN	0.56
0705000701	Red Cedar Lake	KNUTESON CREEK	0.56
0705000203	Flambeau Flowage-Headwaters Flam R	FLAMBEAU RIVER	0.54
0705000103	Lake Chippewa	HAY CREEK @ MOOSE LAKE ROAD	0.53
0707000312	Cranberry Creek	CRANBERRY CREEK AT 8TH STREET	0.53
0705000204	Butternut Creek	BUTTERNUT CREEK	0.52
0707000102	Eagle River	EAGLE RIVER AT STH-70	0.52
0707000103	Pioneer Creek-Wisconsin River	WISCONSIN RIVER - AT CTH G EAGLE RIVER	0.52
0707000109	Middle Tomahawk River	TOMAHAWK RIVER - AT PRAIRIE RAPIDS RD, UPSTREAM FROM	0.51
0703000508	Balsam Branch-Apple River	BALSAM BRANCH AT 105TH AVE - UPSTREAM OF LAKE WAPECA	0.50
0707000105	Gillmore Creek-Big St. Germain River	ST GERMAIN RIVER - BELOW STH 70, ABOVE DAM	0.49
0707000113	Lake Mohawksin-Lake Alice-Wisconsin R	CRESCENT CREEK - FIRETOWER RD	0.45
0703000109	Clam River	CLAM RIVER AT LYNCH BRIDGE ROAD	0.45
0707000113	Lake Mohawksin-Lake Alice-Wisconsin R	NOISY CREEK AT WOODFORD RD	0.43

Total Nitrogen (median May - October) (minimum of 4 sample results) (underlined values -- nitrate only)			
HUC 10	Watershed	Location_Description	(mg/L)
0703000501	Wood River	WOOD RIVER AT WEST RIVER ROAD CROSSING (1MI ABOVE	<u>0.40</u>
0705000206	Middle Flambeau River	PINE CREEK AT CTY HWY EE	<u>0.40</u>
0703000204	Namekagon River	NAMEKAGON RIVER DOWNSTREAM OF NAMEKAGON TRAIL	<u>0.39</u>
0703000105	Yellow Lake-Yellow River	YELLOW RIVER DOWNSTREAM OF LOWEST HWY 35 CROSSI	<u>0.38</u>
0707000101	Deerskin River	DEERSKIN RIVER AT RANGLINE RD	<u>0.37</u>
0705000201	Manitowish River	MANITOWISH RIVER - NEXT TO BENSON LAKE ROAD	<u>0.36</u>
0707000302	Mill Creek	MILL CREEK AT CTH PP BRIDGE	<u>0.36</u>
0707000303	City of Stevens Point-Wisconsin River	extrapolated from Mill Creek	<u>0.36</u>
0705000201	Manitowish River	TROUT RIVER BELOW WILD RICE LAKE	<u>0.35</u>
0703000201	Upper Namekagon River	NAMEKAGON RIVER @ HOSPITAL RD	<u>0.33</u>
0707000110	Lower Tomahawk River	LITTLE RICE CREEK AT CTH-N	<u>0.33</u>
0705000104	Couderay River	COUDERAY RIVER	<u>0.31</u>
0703000505	Trade River	TRADE RIVER AT EVERGREEN AVENUE	<u>0.26</u>
0705000704	Lake Chetek	CHETEK RIVER AT 4 1/2 AVENUE CROSSING	<u>0.23</u>
0705000503	Lake Wissota	YELLOW RIVER AT CTH XX	<u>0.18</u>
0707000112	Spirit River	SPIRIT RIVER-BELOW CONFLUENCE WITH SQUAW CREED	<u>0.10</u>
0707000107	Pelican River	PELICAN RIVER AT GERMOND RD	<u>0.07</u>
0705000101	West Fork Chippewa River	WEST FORK CHIPPEWA RIVER ADJACENT TO COUNTY HIGH	<u>0.06</u>
0705000102	East Fork Chippewa River	CHIPPEWA RIVER, EAST FORK - CTH 8 ABOVE FLOWAGE	<u>0.06</u>
0703000202	Trego Lake-Namekagon River	NAMEKAGON RIVER	<u>0.05</u>
0705000205	Upper Flambeau River	NORTH FORK FLAMBEAU RIVER AT HOLTS LANDING	<u>0.04</u>
0703000201	Upper Namekagon River	NAMEKAGON RIVER	<u>0.03</u>
0705000205	Upper Flambeau River	NORTH FORK FLAMBEAU RIVER BELOW CROWLEY DAM	<u>0.03</u>
0703000203	Totagatic River	TOTAGATIC RIVER AT THOMPSON BRIDGE ROAD CROSSING	<u>0.02</u>
0703000101	Upper St. Croix-Eau Claire Rivers	ST CROIX RIVER AT OLD HWY 53	<u>0.00</u>
0703000103	Upper Tamarack River	UPPER TAMARACK RIVER AT CTH T BRIDGE	<u>0.00</u>
0703000108	North Fork of the Clam River	NORTH FORK CLAM RIVER AT MALONE ROAD CROSSING	<u>0.00</u>
0704000104	Hay Creek-Mississippi River	na	na
0709000409	Keith Creek-Rock River	na	na
0703000106	Lower Tamarack River	na	na
0704000107	Lake Pepin	na	na
0709000312	Waddams Creek-Pecatonica River	na	na
0709000316	Pecatonica River	na	na
0709000408	Sugar Creek	na	na
0712000403	Bull Creek-Des Plaines River	na	na

